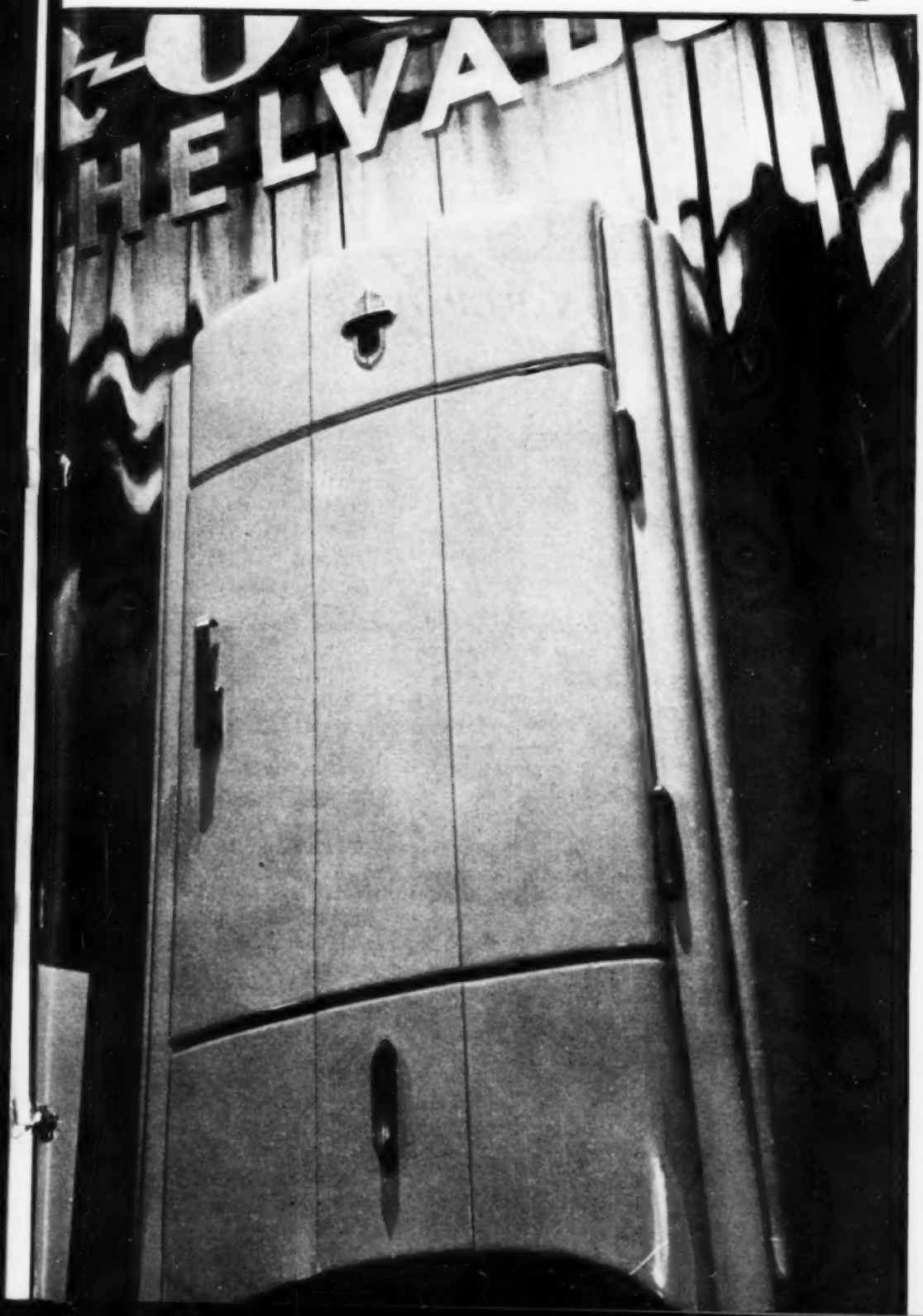
CONSUMERS UNION reports-



for JULY 1936
on

MECHANICAL REFRIGERATORS

USED CARS

MOTOR OILS

BATHING SUITS

SUNBURN PREVENTIVES

TRAVEL

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CONSUMERS UNION
OF UNITED STATES
22 E. 17th St. New York

CONSUMERS UNION reports-

VOLUME I NUMBER 3 — 55 — JULY, 1936

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CONSUMERS UNION *Reports* is published monthly by Consumers Union of United States, Inc., Room 1435, 22 East 17th Street, New York, N. Y. Arthur Kallet, *Director;* D. H. Palmer, *Technical Supervisor.* OFFICERS: Colston Warne, *president;* James Gilman and Julius Hochman, *vice-presidents;* Frank Palmer, *secretary;* Adelaide Schulkind, *treasurer.* BOARD OF DIRECTORS: Robert Brady, Heywood Broun, Osmond K. Fraenkel, James Gilman, John Heasty, A. J. Isserman, Arthur Kallet, Charles A. Marlies, D. H. Palmer, Frank Palmer, A. Philip Randolph, Bernard Reis, Rose Schneiderman, Adelaide Schulkind, and Colston Warne. Consumers Union of United States is a non-profit, membership organization. Membership fees are $3 a year for the full service and $1 a year for the limited service. Reduced group membership fees are available for students, members of trade unions, unemployed groups, consumer clubs and other organizations.

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CONSUMERS UNION REPORTS:

THE GOOD HOUSEKEEPING INSTITUTE

The Good Housekeeping Institute is a fraud. With its "Seal of Approval," and its "scientists," it is, indeed, one of the greatest frauds now being perpetrated on American consumers. These assertions, which to many will be an old story, are repeated here because several Consumers Union members have questioned the use in the June *Reports*, of the term "fraudulent" in connection with the renowned testing laboratory of *Good Housekeeping* magazine. Letters from members show, too, that many still trust the Good Housekeeping Institute and its seal.

Makers and sellers of worthless and dangerous products have escaped conviction for fraud because they were so ignorant that the government could not prove fraud—that is, knowing and willful dishonesty.

Good Housekeeping could scarcely plead ignorance as an excuse for approving and guaranteeing dishonest products. It actually has laboratories with white-coated "scientists," microscopes, test tubes, and all the other paraphernalia laboratories are supposed to have. The Good Housekeeping Institute is headed by Dr. Walter Eddy, who was considered by many to be a scientist before he began getting his pay checks from William Randolph Hearst, owner of *Good Housekeeping* magazine.

Those who are familiar with the career of Hearst and with his publishing standards will accept the foregoing statements as matters of fact. For others, a review of a few typical advertisements which have appeared in *Good Housekeeping* should suffice. These advertisements should be considered in the light of the following "Guaranty" which appears in each issue of Good Housekeeping: ". . . EVERY product advertised in Good Housekeeping is guaranteed by us as advertised herein. . . . Products which come within the testing scope of Good Housekeeping Institute or Good Housekeeping Bureau must be tested and approved before they may be advertised in Good Housekeeping. . . . All other products are carefully examined and investigated by competent experts. Good Housekeeping, further, examines every advertisement offered to it for publication and makes every effort to assure itself that essential claims are justified."

Saraka—advertised in and guaranteed by *Good Housekeeping* as a laxative consisting of "bassorit, a material gathered from trees in faraway India," plus "a second vegetable ingredient, a specially prepared frangula . . ." Consumers Union tests showed that an important ingredient of *Saraka* was phenolphthalein, a chemical injurious to many persons, which has been condemned by a number of medical authorities as too uncertain in its action and too unsafe for general use.

Fleischmann's Yeast—long advertised in *Good Housekeeping* for constipation and for the complexion, though its testimonials and its claims were repeatedly laughed at by competent authorities. Now it "corrects run-down condition by feeding and purifying the blood." According to medical experts, there is absolutely no basis for such a claim except the desire of the Fleischmann Company to make profits from those who are "run down" as well as from those with acne or constipation.

Vapex—introduced as "a famous wartime discovery" of "remarkable germ-killing power." The Federal Food and Drug Administration reported that *Vapex*, selling then for 75 cents a bottle, consisted essentially of water, alcohol,

(*Continued on Page* 24)

MECHANICAL REFRIGERATORS

Ratings of 14 makes of mechanical refrigerators based on relative cost of operation, durability, and other important factors. This report will help you understand why bills for electricity get bigger month after month, with the average poorly constructed mechanical refrigerator.

CONSERVADOR—SHELVADOR—EJECT-O-Cube — Adjusto-Shelf — Foodex — Handi-bin—Touch-A-Bar. . . . With these magic words, mechanical-refrigerator makers persuade the American public to buy their product. Yet these words have absolutely nothing to do with the essential qualities of a refrigerator.

The sale of refrigerators for the last two years has broken all previous records, even the high mark set in 1929. The wide variations in design and special features only serve to increase the buyer's difficulty in making a selection on rational grounds. Should he purchase a gas or an electric refrigerator? What are the advantages of a "Sealed-in-Steel-Thrift-Unit"? Is the durability and economy of the "rollator" compressor greater than or less than that of the conventional reciprocating compressor? Which refrigerator really has the "lowest cost of operation"? Streamlining, the art department's contribution to most makes of refrigerators, has no functional value unless, as someone has suggested, one contemplates throwing the box out of the window.

The Important Things

Two things are of prime importance, besides the original cost of a refrigerator: how much will it cost to run; and how durable is it? But these two seemingly simple things depend on many factors; and with nothing to guide him but the information he gets from advertisements or from salesmen, the average householder is in no position to recognize these factors nor to make the comparisons necessary for a wise choice between competing boxes.

This report is intended to do two things: first, to compare the various makes on the basis of laboratory tests and expert examination; and second, to describe the factors in design and construction which affect essential quality, so that the buyer can better meet the claims of importunate salesmen, each one of whom will still insist that the box he sells is best.

In rating the various refrigerators, little consideration was given to "special" features and devices, such as "Shelvador" or "Foodex." The Shelvador, for example, with which the *Crosley* is equipped is doubtless of some value, but it will in no wise compensate for the poor showing made by this refrigerator in other respects. The ratings are based instead on such considerations as cost of operation, general performance, and quality and durability of compressor unit and of box.

There are two general types of compressors or pumps for circulating and compressing the refrigerant. One is the well-known reciprocating, piston-cylinder type. The other is the so-called rotary type. High-quality materials and workmanship are probably more important for long dependable service, however, than the type of unit design. Some compressors, for example, have a steel shaft running in cast iron bearings. Good construction would provide bearings made of bronze or other alloy in place of the cast iron. *Frigidaire* has recently been equipped with a rotary compressor similar in some respects to the *Norge* "rollator," indicating that this type of compressor is believed by the makers to have certain advantages over the reciprocating type for household refrigerators.

The conventional air-cooled, splash-lubricated compressor (not the oil-cooled, sealed unit) sometimes runs at rather high temperatures, causing the lubricating oils to carbonize, stick under the valves, and gum up the piston rings, with greatly reduced over-all efficiency.

Sealed Units

A sealed-in unit, contrary to claims and popular impression, can leak; in fact, no compressor can be hermetically sealed in. Leaks can and do occasionally occur as a result of tubing fractures and other causes. Little can be done by service men to repair a sealed-in mechanism, and if it does give trouble the whole unit must be replaced. Consequently, if one purchases a refrigerator with the sealed unit, a good, long-time guarantee in writing, backed by a reliable manufacturer and dealer, should be obtained.

Independent refrigerator service men favor the conventional type of reciprocating compressor unit rather than the sealed type, but this is due partly to the fact that they are most familiar with the conventional type and that they make their living by servicing it.

Poor cabinet insulation is difficult to detect. Deficiencies in the insulation are not evident to the ordinary observer and may not appear until the refrigerator has been in use several months or even years. A refrigerator

with poor insulation may impress the user as being good because it freezes ice cubes rapidly. But this is only because the freezing coils must maintain lower temperatures—at higher cost—to compensate for the poor insulation. Rapid freezing of ice cubes at customary regulator setting is cause for suspicion, not commendation.

Poor Sealing

Probably the most common defect of refrigerator cabinets is poor sealing against moisture. Poor sealing is one of the chief causes for the rapid deterioration of a refrigerator which may have been efficient and economical when new. Everyone is familiar with the manner in which moisture from the air condenses on cool surfaces during wet weather. This accounts for the "sweating" of the walls and other surfaces inside a refrigerator when the door is opened during humid summer weather. The same thing occurs within poorly sealed refrigerator walls. Moisture from the air condenses on the cold surfaces in the space between the walls containing the insulating material. As fast as this moisture condenses it is replaced by additional water vapor, which continuously diffuses into this space from the outside through cracks and pores. This water vapor, in turn, condenses. If the insulation is of a type which absorbs water, it gradually becomes saturated with this condensed moisture and is rendered almost useless.

Impregnated paper or a thin layer of asphalt or other compounds does not keep water vapor from entering and saturating the insulation.

It has been found that the moisture content of an absorbent insulating material gradually increases from year to year. The more humid the climate, the more serious is this difficulty, and the more important it is to have non-absorbent insulation and good sealing. According to reports in the April 1, April 22, and May 13, 1936, issues of *Electric Refrigeration News*, the only refrigerator insulation found satisfactory in the warm, humid climate of Hawaii was cork and Dry-Zero (specially prepared kapok). It was found that most refrigerators with other types of insulation required replacement of the insulation after two or three years. In this brief period the insulation became so saturated with moisture that the refrigerator could not operate satisfactorily.

Cork is very resistant to water and does not readily become saturated. Dry-Zero is a fibrous material thoroughly impregnated with a wax constituent which enables it to shed water much as duck feathers do. A lump of Dry-Zero can be forcibly submerged in water for days and still have practically no free water between the fibers.

Water vapor commonly enters the insulation via the joints in the cabinet, at the back or where the top cover is fastened on, or under the strips which cover the door frame. In some of the cabinets with the motor compartment at the top, it is easy for moisture to penetrate the tops of the cabinet walls. This is especially true where only a wooden frame obstructs its penetration. Probably no cabinet is sealed as well as it should be.

Although the original cost of a large refrigerator is in most cases considerably higher than that of a somewhat smaller one, there is comparatively little difference in operating cost. Heat enters the cabinet not only through the walls, but also through and around doors, and through openings for tubing—and the loss of heat through these openings is practically independent of the size of the box. Thicker insulation in various parts of some of the larger cabinets keeps their operating cost down to about the same level as that of the smaller ones.

The ice industry has made much of the fact that mechanical refrigerators dehydrate or dry out food rapidly. The lower the temperature of the evaporator (cooling or freezing coils), the more dehydration there will be. If the cabinet is well insulated and the evaporator is large, the evaporator need not be excessively cold. A very cold

"Eject-o-Cube and Adjusto-Shelf," but a Poor Refrigerator.

evaporator, on the other hand, is necessary to compensate for the effects of small evaporator size or poor cabinet insulation. A recent innovation of the *Monarch* refrigerators is the use of a finned evaporator which does not need defrosting. Fins increase the evaporator surface enough to enable it to cool the food space sufficiently at an evaporator temperature hardly below freezing point. The ice that collects on the fins has a surface temperature of 32° F., the temperature of melting ice, so that dehydration of the air should not be much greater than in an ice-cooled cabinet.

The claim is made that a door over the opening of the ice compartment will keep food odors out of the ice cubes. The evaporator doors on some makes (the *Norge* is one) are fairly airtight when closed. There usually are openings at other places, however, where air and odors can circulate, making it impossible to keep the ice compartment free of food odors.

A space under the evaporator deep enough for the storage of foods which need to be kept very cold is convenient. Most refrigerators have only a shallow space for the drip tray.

Built-in tray lifters are a decided convenience. Trays do freeze down, and it is ordinarily difficult to remove them.

Water in ice trays freezes faster if the cube partitions or grids are of metal; but a considerable amount of ice is wasted in melting out the cubes. Aluminum partitions which are thicker at the bottom make tapered ice cubes which are easier to remove.

Shelves and Gadgets

Shelving is generally of round metal. Flat wire shelving is better, as small dishes do not slide off so easily; and flat, diamond-mesh shelving is best of all. Most shelving is tinned steel, which eventually rusts. Material such as aluminum or other non-corroding metal is preferable.

The various gadgets and devices sold to be used in the interior of the refrigerator, such as containerettes and fancy baskets, are of little if any value to most users. The buyer will usually find that regular ice-box dishes serve his purposes better. He would be better off if the gadgets were eliminated and the retail price lowered.

Hardware such as hinges and handles is often defective. It should be carefully examined when the refrigerator is purchased, for cracks and flaws in the finish. It should again be examined before the cabinet warranty expires. When possible, one should avoid such removable ornamental pieces as the hinge pin covers on the *Kelvinator* 1936 model, which easily fall off or become broken.

Interior finish should always be porcelain enamel—even where it costs extra dollars—and on the bottom of the food compartment, should be of the acid-resisting type. Inside edges and corners should be rounded for ease in cleaning. If one cannot afford porcelain enamel on the outside, the finish should be a baked, synthetic drying oil. Drying oils, such as Dulux and Glyptal, are much better than lacquer or Duco, as they wear better, protect the iron better, and do not discolor so readily.

Electric appliances generally have poor electrical insulation. Four of the refrigerators were subjected to current-leakage tests, and in all of them the leakage of current from the electric circuit to the metal parts of the refrigerator exceeded safe limits. In one electric refrigerator, a *Kelvinator*, the insulation failed in the high-voltage test under high humidity conditions.

This shock hazard is especially serious if the refrigerator is placed near a grounded object, such as a water or steam pipe—as it is very likely to be in a kitchen. The mechanical unit of a refrigerator should therefore be grounded when it is installed, in order to minimize this danger.

Six different substances are used as refrigerants in the refrigerators reported on in this study. Sulfur dioxide (SO_2) is the most commonly used. Dichlorotetrafluoroethane ($C_2Cl_2F_4$), referred to as F-114 by the trade, is used in the *Frigidaire*. Carrene, a product made famous by *Grunow* advertising, is methylene chloride (CH_2Cl_2). *Ice-O-Matic*, *Montgomery Ward*, and *Monarch* use methyl chloride (CH_3Cl) as a refrigerant. Ammonia is the refrigerant used in the *Electrolux*. Freon — dichlorodifluoromethane (CCl_2F_2)—is sometimes used as the refrigerant in the *Westinghouse* in place of sulfur dioxide.

The toxicity of both sulfur dioxide and ammonia is well known but since they are irritating and therefore readily detectable, they represent less of a hazard than some of the others. F-114, Carrene, and Freon, while comparatively safe under ordinary conditions, may decompose in the presence of an open flame and produce poisonous products. Methyl chloride is both inflammable and toxic. Since it is odorless it should be mixed with some odorous substance so that a leak can be detected. In less than one year there were twenty-nine deaths in Chicago from poisoning caused by defective methyl-chloride refrigerating systems.

The hazard of a toxic refrigerant depends largely on the quantity present. A proposed new refrigeration code for Chicago states that inflammable refrigerants or refrigerants of a poisonous nature, when used in systems containing more than six pounds of refrigerant, shall if they are odorless have an added substance which will impart a pungent odor or an irritating quality to the refrigerant. Even as little as one pound of refrigerant, however, may be dangerous under some circumstances—for example, if leakage occurs in a small house or room where there is little ventilation.

Guarantees

Most of the refrigerator manufacturers offer in addition to the one-year guarantee for the whole refrigerator a separate guarantee for the refrigerating unit. As a rule the latter runs for a period of four years in addition to the first-year general guarantee. Do not give too much weight to these long-time guarantees as they apply only to the refrigerating unit. Other, less durable parts are far more likely to need repair or replacement, but the costs in such cases must be borne entirely by the owner despite the long-time guarantee.

For example, control equipment is not covered in the long-time guarantee for the refrigerators which are included in this study (except in the case of the *Electrolux*). Such equipment is much more likely to need repairs than the refrigerating unit itself.

Some manufacturers, General Electric for example, charge an extra $5 for the long-time guarantee on the refrigerating unit. The value of any guarantee depends to a very large extent

on the integrity of the local retailer. If he has a reputation for honest service, a long-term guarantee may be worth the extra charge made for it. If the local dealer cannot be relied upon, however, an extra guarantee is probably not worth paying for.

In some cases, guarantees cover parts only. All labor must be paid for by the owner. Don't pay extra for such a guarantee; it isn't worth while.

Many dealers are objecting to long-time guarantees, as they wish to avoid the expense of servicing a refrigerator once it has been sold.

In general, what people should demand in a refrigerator is adequate food preservation and a quiet, trouble-free machine which can be operated at as low an annual cost as possible. In the ratings given here, the principal factors considered in listing the refrigerators in the respective preference groups are: measurable quality and performance characteristics; cabinet and compressor design and construction; insulation; and cost of operation. Other features, such as added gadgets, rapid freezing, and large ice-storing capacity, add comparatively little to the general utility of the refrigerator, although a large ice-storage capacity indicates as a rule a large evaporator, which is desirable.

All of the makes reported on are sold in a number of sizes. As already pointed out, a somewhat larger size may not mean a greater operating cost. Hence, if one can afford the higher initial cost of the large cabinet, it is well to buy a size sufficient for family needs without excessive crowding.

The net volume of the food space is given both in the ratings and in the table. The compressor units are all of the reciprocating type unless otherwise noted. The estimated total annual cost includes fixed cost (interest and insurance at five per cent), and cost of operation, with current at the designated rates.

Ratings are based in part on tests conducted on 1936 models in a well-equipped university laboratory, and in part on examination of the refrigerators and critical study and comparison of the manufacturers' specifications by our consultant.

MECHANICAL REFRIGERATORS

Best Buys

(*Large Cabinets*)

Norge E-62-6 (Borg Warner Corp., Detroit). $171. 6.3 cu. ft. Own make of cabinet. Finish: exterior, synthetic enamel; interior, porcelain. Dry-Zero insulation. Rotary compressor. Refrigerant, sulfur dioxide, 5 lb. Has no sheet metal over insulation above motor compartment. With absorbent insulation, this would be a disadvantage, but with Dry-Zero, it is an advantage since it will permit condensed moisture to escape through the composition board. Rotary compressor well built. The large amount of sulfur dioxide (5 lb.) is objectionable. Low speed combined with large capacity and good insulation should give this unit very long life, and make it the most satisfactory refrigerator of those tested for use in the South, or in other warm, humid areas. The wood frame and breaker strips should last as long as the rest of the cabinet. For hot climates, select de luxe models which have long condensers and two cooling fans. Cabinet construction, very good. Operating economy excellent.

General Electric M-6 (General Electric Co.). $199. 6.4 cu. ft. Own cabinet. Finish: exterior, Glyptal; interior, porcelain. Thermocraft insulation. Refrigerant, sulfur dioxide, 2.25 lb. Has new monitor top, which is more easily cleaned than the regular type of air-cooled condenser (which looks like an automobile radiator). Being visible, it is more apt to be kept clean and thereby maintain its radiating effectiveness. Exterior of cabinet is well sealed but little attempt has been made to seal under the breaker strips. Water vapor will eventually penetrate the material used to seal the top of the cabinet wall. This model has a well-constructed cabinet and a good compressor. Its operating cost is low.

(*Small Cabinets*)

General Electric LK-1 (General Electric Co., Cleveland). $79.50. Chest type, opening at top. 2 cu. ft. Own make of cabinet. Finish: exterior, Glyptal; interior, porcelain. Thermocraft insulation. Refrigerant, sulfur dioxide, 1.4 lb. This is a very small box, most of the other boxes ranging from 5 to 7 cu. ft. This model will be satisfactory for a small family or one which prepares only occasional meals. Cost of operation low. The arrangement of the door and the cubical food space help to increase the efficiency. This model is well sealed against moisture.

General Electric LK-2 (General Electric Co.). $84.50. Chest type. 2 cu. ft. Description and comments on model *LK-1* apply. The outside of the door (top of the refrigerator) in this chest-type model is of porcelain enamel instead of Glyptal—the only difference between it and the *LK-1*.

Also Acceptable

(*In estimated order of merit*)

Grunow 58M (General Household Utilities Co., Chicago). $174.50. 5.6 cu. ft. Own cabinet. Finish: exterior, Grunow de luxe (Alkyd); interior, porcelain. Dry-Zero insulation. Rotary compressor. Refrigerant, Carrene, 3.8 lb. Cabinet is well sealed. Insulation is so good that the thermostat setting will need to be changed to make it possible to freeze cubes in cool weather, since at the normal (45° F.) setting, the evaporator is barely cold enough to freeze. The condenser is more accessible for cleaning than formerly. Claims for safety of refrigerant, Carrene, not justified.

Frigidaire DRS6-36 (Frigidaire Corp., Dayton, Ohio). $164.50. 6.2 cu. ft. Own cabinet. Finish: exterior, Dulux; interior, porcelain. Frigidaire's own special type of insulation. (A few units are reported to be insulated with

Dry-Zero.) Rotary compressor. Refrigerant, F-114, 1.2 lb. Insulation is rather thin. The cabinet has a wooden framework under the breaker strips in the doorway through which moisture will eventually pass, although the cabinet as a whole is sealed better than average. The depth of the cabinet is rather shallow compared with the other dimensions—an advantage with respect to utilization of food-storage space. The cabinet must be moved from the wall in order to clean the condenser, which is in the rear. Accumulation of dirt and dust should be wiped from the condenser at least once a year.

General Electric V-7 (General Electric Co.). $244. 7.0 cu. ft. Own cabinet. Finish: exterior, Glyptal; interior, porcelain. Thermocraft insulation. Refrigerant, sulfur dioxide, 2 lb. This model has the compressor unit below the food compartment. Insulation not quite as well protected from moisture at the top as in the monitor-top unit. As in the *Frigidaire*, the condenser is in the rear, making it necessary to move the box away from the wall for cleaning.

COMPARATIVE COST AND QUALITY DATA

The figures given in this table are estimated on the basis of certain assumed average conditions of use, and provide a rough comparison of costs for the refrigerators studied. The actual depreciation and operating costs of any refrigerator will vary with climate (hot or cold, dry or humid), with kitchen temperatures, and with particular conditions of use. Actual figures in any one case may, therefore, differ considerably from the figures which are shown in this table.

MAKE AND MODEL NUMBER	COST $	NET VOLUME FOOD SPACE—CU. FT.	COMPRESSOR RATING	CABINET RATING	ESTIMATED AV. MONTHLY OPERATING COST AT 5c PER KILOWATT HR. WHEN NEW $	ESTIMATED AV. MONTHLY OPERATING COST AT 5c PER KILOWATT HR. AV. OVER 10 YRS.[1] $	ESTIMATED TOTAL ANNUAL COST[2] 2c PER KW HR. $	ESTIMATED TOTAL ANNUAL COST[2] 5c PER KW HR. $
Coldspot 3324	98.50	6.4	Fair	Very poor	2.65	4.30	35	65
Coldspot 3325	129.50	6.3	Fair	Fair	2.25	3.60	35	65
Crosley GAQ60	154.95	6.0	Fair	Fair	2.50	4.30	45	75
Electrolux G-500A[3]	170.00	5.0	—[3]	Fair	2.10[5]	4.00[5]	35[4]	70[5]
Fairbanks Morse B-5	149.50	5.1	Fair	Very poor	1.55	3.10	35	60
Frigidaire DRS6-36	164.50	6.2	Fair	Good	1.45	2.60	35	55
Frigidaire M6-36	189.50	6.2	Fair	Good	1.45	2.60	40	60
General Electric M-6	199.00	6.4	Good	Good	1.25	2.00	35	50
General Electric V-7	244.00	7.0	Good	Fair	1.35	2.10	45	60
Grunow 58M	174.50	5.6	Good	Good	1.50	2.30	35	55
Ice-O-Matic D-3651	150.00	5.3	Fair	Poor	1.60	2.80	35	55
Ice-O-Matic D-3662	192.00	6.4	Good	Poor	1.65	2.80	40	60
Kelvinator K5-36	164.50	5.2	Fair	Poor	1.05	2.00	35	50
Kelvinator K6-36	189.50	6.2	Fair	Poor	1.10	2.00	40	50
Monarch R9C	220.00	6.5	Good	Poor	2.05	3.50	45	70
Monarch R7D	179.00	6.7	Good	Poor	2.05	3.50	40	65
Montgomery Ward S-550	104.95	5.7	Fair	Very poor	2.25	4.50	35	70
Montgomery Ward E-6610	114.95	6.3	Fair	Poor	2.10	4.00	35	65
Norge E-62-6	171.00	6.3	Good	Good	1.50	1.90	30	45
Stewart Warner 656	169.95	6.3	Good	Poor	1.50	2.50	35	55
Westinghouse ED-60	194.50	6.0	Good	Fair	2.00	3.40	45	70
Westinghouse EDX-67	239.50	6.7	Good	Fair	2.00	3.20	50	70
General Electric LK-1	79.50	2.0	Good	Good	.70	1.10	15	25
General Electric LK-2	84.50	2.0	Good	Good	.70	1.10	15	25

[1] This is calculated by estimating average kilowatt-hour consumption for a 10-year period, and takes deterioration of insulation into account.

[2] This cost covers depreciation, interest, and average energy cost for the estimated life of the refrigerator in North Central U. S. Cost of repairs is *not* included in this estimate.

[3] Has no mechanical compressing unit. A gas flame supplies the energy to complete the refrigerating cycle. Has no movable mechanical parts.

[4] Gas priced at 70c per thousand cu. ft.—1,000 btu per cu. ft.—approximate average cost for natural gas areas in U. S.

[5] Gas priced at $1.25 per thousand cu. ft.—520 btu per cu. ft.—approximate average cost for manufactured gas areas in U. S.

Also Acceptable (continued)

Frigidaire M6-36 (Frigidaire Corp.). $189.50. 6.2 cu. ft. Own cabinet. Finish: exterior, Dulux; interior, porcelain. Frigidaire's own special type of insulation. Rotary compressor. Refrigerant, F-114, 1.2 lb. Comments on *Frigidaire DRS6-36* apply. Higher initial cost makes this model a less desirable buy than the *DRS6-36*.

Kelvinator K5-36 (Kelvinator Corp., Detroit). $164.50. 5.2 cu. ft. Own cabinet. Finish: exterior, Dulux; interior, porcelain. Insulation, Kelvotex, apparently the same as Hermetex. Refrigerant, sulfur dioxide, 2.2 lb. The thickness of the insulation has been increased and the sealing has been improved this year. However, the cabinet joints are still not sealed but only lapped. The insulation looks like corrugated paper, and is sealed only in impregnated paper envelopes. Efficiency did not, however, decrease during a seven-day run in high humidity (over 90%) at room temperature of 100° F. Hinges became corroded during this run. In the unit tested, the electrical insulation in the motor failed at 600 volts after the refrigerator had been exposed to high humidity at 90° F. for fifty hours, with the motor not running. The leakage current under this condition, before the voltage test, was excessive. The white composition caps on the hinges fell off after brief exposure to heat and humidity.

Kelvinator K6-36 (Kelvinator Corp.). $189.50. 6.2 cu. ft. Except for larger size and smaller amount of refrigerant (2 lb.), this model is practically the same as model *K5-36*.

Electrolux G-500A (Electrolux Refrigerator Sales Div., Servel, Inc., distr., Evansville, Ind.). $170. 5.0 cu. ft. Finish: exterior, Newtone synthetic enamel; interior, porcelain. Temlok insulation. Refrigerant, ammonia. Detailed specifications on this model not available. A gas flame supplies the energy for the freezing cycle. The heat given off to the kitchen is about three times that given off by the electric motor in the mechanical type of refrigerator. Definitely more quiet than mechanical refrigerators. Insulation is fairly well sealed. The relative rating of this model is higher in localities where gas is available for 60c. or less for 1,000 cu. ft. of 520 btu per cu. ft. gas. During continuous hot weather, this refrigerator may not keep temperature of food space down to safe levels, because of relatively low capacity and amount of heat dissipated to surrounding air. Should be placed in well ventilated space.

Ice-O-Matic D-3662 (Williams Oil-O-Matic Heating Corp., Bloomington, Ill.). $192. 6.4 cu. ft. Own cabinet. Finish: exterior, Dulux; interior, porcelain. Balsam wool insulation. Refrigerant, methyl chloride, 5.2 lb. Has two-cylinder compressor which operates at very low speed. Also has large capacity, and is pressure-lubricated which should make it a very durable unit. Cabinet sealing is only fair and does not have as much insulation (balsam wool) as most of the refrigerators using this material. Too much dependence is placed on the impregnated paper envelopes for keeping out moisture. The cabinets will probably fail or at least become inefficient owing to accumulation of moisture—long before the unit wears out. It has an unusually convenient door-opening device.

Ice-O-Matic D-3651 (Williams Oil-O-Matic Heating Corp.). $150. 5.3 cu. ft. Own cabinet. Finish: exterior, Dulux; interior, porcelain. Balsam wool insulation. Refrigerant, methyl chloride, 5 lb. Same comments apply as for model *D-3662*, except that this has a one-cylinder compressor unit and may not be as durable since pressure lubrication is not used in this model. Relative rating will be somewhat higher where electricity is 2c. per kilowatt hour or thereabouts.

Stewart Warner 656 (Stewart Warner Corp., Chicago). $169.95. 6.3 cu. ft. Own cabinet. Finish: exterior, Dulux; interior, porcelain. Balsam wool insulation. Refrigerant, sulfur dioxide, 5 lb. Has a low-speed compressor of large capacity. Cabinet is fairly well sealed, although the joints are not as tight as they should be. The large amount of sulfur dioxide (5 lb.) is objectionable. Relative rating is somewhat higher where electricity is available at about 2c. per kilowatt hour.

Not Acceptable

Fairbanks Morse B-5 (Fairbanks Morse and Co., Indianapolis). $149.50. 5.1 cu. ft. Cabinet by Seeger. Finish: exterior, Dulux; interior, porcelain. Model tested insulated with impregnated corrugated paper (Thermocraft). Refrigerant, sulfur dioxide, 1.5 lb. Water vapor may enter cabinet through insulation exposed in motor compartment and also through top of cabinet. Decreased noticeably in efficiency in seven-day run in room temperature of 100° F. at high humidity. Inner door cannot help much in keeping cold air in the box. It may actually be a nuisance because the chances are that it will have to be opened many times anyway. Cabinet construction, very poor. Operating cost, fairly high. Model C, just coming on market, has improved insulation and finned evaporator, making it somewhat more efficient.

Westinghouse EDX-67 (Westinghouse Electric and Mfg. Co., Mansfield, Ohio). $239.50. 6.7 cu. ft. Own cabinet. Finish: exterior, Dulux; interior, porcelain. Balsam wool insulation. Refrigerant, sulfur dioxide, 2.1 lb. This model has the compressor unit at the top. The insulation is quite well sealed. This model may be supplied with Freon refrigerant instead of sulfur dioxide, at an extra cost of $5. Freon units are somewhat more efficient and have appreciably more cooling capacity in hot weather. Freon is also safer than sulfur dioxide. Cabinet construction is only fair; operating cost, high.

Westinghouse ED-60 (Westinghouse Electric and Mfg. Co.). $194.50. 6.0 cu. ft. Own cabinet. Finish: exterior, Dulux; interior, porcelain. Balsam wool insulation. Refrigerant, sulfur dioxide, 2 lb. This model has the compressor unit below. The insulation is not sealed as well as in the *EDX-67* model. This model is also supplied with the Freon refrigerant. Rating is somewhat higher where electricity sells for around 2c. per kilowatt hour.

Monarch R7D (Malleable Iron Range Co., Beaver Dam, Wis.). $179. 6.7 cu. ft. Cabinet by Sanitary. Balsam wool insulation. Refrigerant, methyl chloride, 1.25 lb. Has low compressor speed. Insulation not well sealed. The bottom of the food space is higher

than in most refrigerators so that it is not necessary to bend over much to reach the lower parts of the food compartment. Will rank somewhat higher in communities where electricity sells for around 2c. per kilowatt hour. Cabinet construction is poor; operating cost, high.

Coldspot 3325 (Sears, Roebuck and Co., distr.) Catalog price $129.50. 6.3 cu. ft. Cabinet by Seeger. Finish: exterior, synthetic enamel; interior, porcelain. Dry-Zero insulation. Rotary compressor. Refrigerant, sulfur dioxide, 2 lb. Repair service in the cities having Sears, Roebuck retail stores is believed to be good. Cabinet walls not well insulated against moisture. The wooden framework in the floor of the motor compartment becomes saturated in humid, warm weather. Water condensed on the suction line will collect on the wood and run down into the insulation. Some water may drip on the evaporator and cover it with ice, reducing its capacity and making frequent defrosting necessary. The metal pan on the base of the motor unit is poorly designed, increasing the heat loss. Cost of operation very high. The relative rating of this model would be somewhat higher for communities where current as low as 2c. per kilowatt hour is available.

Monarch R9C (Malleable Iron Range Co.). $220. 6.5 cu. ft. Cabinet by Seeger. Balsam wool insulation. Refrigerant, methyl chloride, 1.25 lb. Insulation not well sealed—even worse than in model *R7D*. Has special finned evaporator construction, which requires defrosting only for cleaning. It does not dry out the food as much as other types. The door-opening device is too high to be operated conveniently if one's hands are full. Cost of operation high.

Montgomery Ward E-6610 (Montgomery Ward, distr.). Catalog price, $114.95. 6.3 cu. ft. Cabinet by Leonard. Finish: exterior, Dulux; interior, porcelain. Hermetex insulation. Refrigerant, methyl chloride, 0.7 lb. Cabinet poorly sealed. The cabinet joints are not sealed at all and moisture will eventually get into the insulation. This model has about 25 per cent more insulation than model *S-550*, lower in this list, and the insulation of the motor compartment is covered with sheet metal. Will rank *Also Acceptable* for communities where electricity sells around 2c. per kilowatt hour. Cabinet construction poor; cost of operation very high.

Crosley GAQ60 (Crosley Radio Corp., Cincinnati). $154.95. 6.0 cu. ft. Own cabinet. Finish: exterior, Dulux; interior, porcelain. Balsam wool and Thermocraft insulation. Refrigerant, sulfur dioxide, 2.1 lb. Sealing of insulation only fair. Unlike most mechanical refrigerators, the *Crosley* has a capillary (non-adjustable) tube instead of an expansion valve. This is likely to cause reduced efficiency at lower room temperatures (70° F.). The Shelvador feature can save a little time in removing food from the refrigerator. Operating cost very high.

Montgomery Ward S-550 (Montgomery Ward, distr.). Catalog price, $104.95. 5.7 cu. ft. Cabinet by Seeger. Finish: exterior, Dulux; interior, porcelain. Hermetex insulation. Refrigerant, methyl chloride, 0.7 lb. Cabinet construction very poor. Estimated operating cost of this refrigerator highest of all rated.

Coldspot 3324 (Sears, Roebuck and Co., distr.). Catalog price $98.50. 6.4 cu. ft. Cabinet by Seeger. Finish: exterior, synthetic enamel; interior, porcelain. Rotary compressor. Refrigerant, sulfur dioxide, 2 lb. General construction of box and unit same as in model *3325*. Balsam wool is used as insulating material in this model, although salesmen claimed it was Dry-Zero. Impregnated paper envelopes surrounding this insulation cannot keep the moisture out. Seven-day run in room at 100° F., relative humidity 90%, showed definite (about 21 per cent) decrease in efficiency. Cabinet construction very poor. Operating cost of this model very high.

The Industry's Workers

THE ELECTRICAL APPLIANCE INDUSTRY has the distinction of enjoying a full measure of business recovery and at the same time of indefensibly exploiting its employees. The net profits of General Electric for the first quarter of 1936 topped $7,000,000; Westinghouse netted close to $4,000,000. The 1935 profits for a selected list of thirty-two electrical equipment concerns, as tabulated by the magazine *Business Week*, were $51,340,000, an increase of 251.9 per cent over 1934. Refrigerator sales exceed all others in the list of larger appliances, with 875,048 units sold in the first four months of this year, compared with 504,778 washing machines.

While profits rose 251 per cent, workers in the industry got pay increases averaging only 4.7 per cent, a comparison of Department of Labor figures for the month of February in 1935 and 1936 shows. The 1936 average weekly wage was $23.54. More significant, an investigating committee appointed by President Roosevelt to study the effects of NRA code junking found that the electrical manufacturing industry was one of five in the country in which three-fourths of the establishments had departed in some degree from the minimum wage or maximum hour provisions of the codes. From the manufacturers' own statements the investigators learned that apprentices earn as little as $5 or $6 a week.

As yet, so far as can be learned, there is no union-made mechanical refrigerator. The status of labor in the mechanical refrigerator industry can be judged from a labor survey of the three great manufacturing companies in which refrigerator production is one of many enterprises. This survey shows clearly that unionization is badly needed, and it is hoped that progress in this field can soon be reported.

General Electric—Probably none of the nation's first-rank industrial companies has been so publicized for a humanitarian labor policy as General Electric Company. The great corporation's two chief executives, Gerard Swope and Owen D. Young, have been laureled as liberals by editorial writers throughout the country. An able publicity staff has even broken into the labor press with stories of a pension plan, an unemployment insurance plan, a bond-selling plan, and other schemes that make GE's tens of thousands of workers just one big happy family.

Here is the other side of the welfare story. Employees say they are forced to accept these multiplex welfare plans under threat of layoffs. What the work-

ers resent is the weekly pay deductions, which average about $1.50. There is the authenticated example of a young man who earned $2.31 for one day's work in the week, but collected only 6 cents after assessments had been made. Nor are the workers unjustified in feeling that the company makes its contribution to these welfare schemes not from profits, but from wage cuts and speedups.

Instead of making general wage cuts that would stir resentment on a broad scale, General Electric has found it wise to cut one department at a time. With most of the employees on piecework, cuts can be disguised as "readjustments" due to slight changes of process, machinery or material. Another method has been to transfer employees to jobs with lower rates. Sometimes two men have exchanged jobs, each losing.

The downstairs transfer has also proved a handy way of avoiding outright dismissals. Veteran employees, nearing the pension age, have often been shifted to unfamiliar work where they can earn little on piece rates. Many have quit, surrendering their pension rights for a small cash settlement, because pensions are based on earnings in the ten years prior to retirement, and the value of the pension would be greatly reduced by further work at low pay.

How to speed the speedup has been studied by GE efficiency engineers with the same thoroughness used in electrical research. The employees, of course, never win. If exceptional skill, superior stamina and complete disregard for health enable one worker to make a decent wage, the piece-work rate may be "readjusted," penalizing also the employees who can work at only a moderate pace.

General Electric organized its own employees. In 1922 the workers voted down a company union plan; two years later the famous Works Council was established. The Works Council fits neatly into Mr. Dooley's description of the type of labor organization favored by employers—one with "no dues, no assessments, no strikes, no boycotts and damn few members."

A final footnote on General Electric's humanitarianism was written early this year at the factory in York, Pa. Despite the fact that workmen in the Bridgeport, Conn., plant of GE had been poisoned by the vapors of Halowax, an insulating compound, the company failed to provide protection at its York plant or warn its employees of the danger. The result was: dead, 2; poisoned, 102.

One encouraging note is that the United Radio and Electrical Workers, a new industrial union, is making some headway in organizing employees at the Schenectady and Lynn plants. At Schenectady last month 400 unionists in the wire and cable and refrigerator departments staged sit-down strikes to protest the company union, the speedup, and wage-cutting.

Frigidaire— For lack of separate data on Frigidaire Corporation, it is pertinent to note the attitude of the du Pont controlled parent company, General Motors Corporation. In a pamphlet distributed to supervisory officials two years ago, President Alfred P. Sloan Jr. said that he believes in collective bargaining—provided that it doesn't interfere with management. President Sloan also feels that the management should not be prevented from "assisting or advising any employee organization in the development or carrying out of plans for the employees' mutual benefit." In the spirit of this declaration he might well have joined the picket lines before his Chevrolet factories last spring!

The man who heartened a frightened public in the fall of 1930 with the statement that it is "important for industry to appreciate the fact that the prosperity of the United States is founded on a high wage scale" was Mr. Sloan. And what high wages Mr. Sloan does pay! The year 1935 was a good one, and 188 top officials of General Motors collected average pay of $54,000, including bonuses. Mr. Sloan's share was $374,505.

The employees, though, didn't fare quite so well. Counting in all of the high-salaried men except the officers of the company, the average wage was $1526, an increase of slightly less than 11 per cent over 1934. Whether a company with *net* profits of $167,226,510 in a single year does its share in promoting high-wage prosperity by paying an average of $29.35 a week is a question Mr. Sloan does not answer.

Westinghouse—Remarkably like General Electric, this company has established an amazing assortment of welfare plans and an impotent company union. The 35,000 Westinghouse workers can be housed, insured, nursed, and pensioned by the company—if they consent to certain deductions from their pay. One-week vacations with pay are given free, however, after ten years' service.

All of these things are done on a business basis, without the handicap of obtrusive sentimentalism. So one of the East Pittsburgh workers learned last month. Osmund Jorstad had climbed from the ranks in twenty-six years of service, only to be laid off in 1931 after two weeks' notice. He had paid out $3500 on a $10,000 company-owned house; jobless, he could pay no more. The vice-president who was praised in a recent issue of *Business Week* for the Westinghouse Company's "outstanding success in human relations" directed Jorstad's eviction.

The golden jubilee of Westinghouse was marked last January with an especially fine issue of the *Westinghouse Magazine*, which the masthead says is "published by employees." The only identified contributors are a vice-president and the general works manager, but there is a little message beginning "Fellow Employees" which epitomizes the attitude of the good company unionist in two sentences: "The problems before the Company will require our best efforts, but we have solved other problems as difficult in past years. We have raised the banner of Westinghouse high and we must keep it high."

ASPIRUB

The Federal Trade Commission has cited Justin Haynes and Company, discoverers of a "new way of taking aspirin." Instead of swallowing tablets, the sufferer is advised to buy a package of *Aspirub* and just rub it on the skin. Because this ointment has an aspirin content of only 1½ per cent, and because even if it were 100 per cent aspirin the medication could not be absorbed through the skin, the government has charged the manufacturers with deceiving the consuming public and using unfair means to divert trade from manufacturers of aspirin tablets. Several million American youngsters would no doubt rejoice if the fantastic claims for *Aspirub* could be proved; for if father could cure a headache by rubbing aspirin ointment behind his ears, why couldn't sonny take castor oil—when necessary—by massaging his stomach?

BATHING SUITS

"JANTZEN!" IT'S SPLASHED ACROSS thousands of billboards. It's ballyhooed more widely, sold in more stores than any other bathing suit. Yet a *Jantzen* was the poorest of all women's suits tested by Consumers Union—and the highest priced.

Six women's and six men's suits of this year's models were tested for quality of wool, quality of yarn construction, closeness or looseness of knit, and elasticity. In addition, each suit was carefully examined to see how well it was cut and sewed.

Only wool suits were included, women's suits up to $4.95 being selected, and men's trunks up to $3.95. Men's trunks were tested rather than full, one-piece suits since they seem to be much more commonly sold this year. In most stores trunks were sold separately from tops, and in some cases tops of the same brand as the trunks were not even available. Bathing in trunks without tops is becoming increasingly popular, and more and more beaches are coming to permit the practice.

Two models of *Wikies* at different prices were tested in order to get some indication of whether higher-priced models of a brand are worth the extra money. Curiously enough, a slightly lower grade of wool was used in the $3.95 *Wikies* than in the $2.95 *Lo-Wikies*. Despite this, however, the higher-priced ones were worth more than the lower-priced, the yarn being of superior construction. Part of the cost apparently went for more wool, the trunks being styled to cover more of the anatomy.

All the women's suits were bought as size 36; yet the chest measurements after stretching ranged from 33 to 50 inches! The men's trunks did not vary so greatly in waist measurement after stretching.

In general, the men's trunks were made of lower-grade, harsher wool than the women's suits and were less elastic. Two of the women's suits were of good-grade wool, two fair, and two inferior; while only one of the men's suits (*Bradley*) contained good-grade wool, the wool in the rest being as poor as or poorer than the inferior grades in the women's suits. Four of the six men's suits, but none of the women's, were made of 2-ply yarn, which is more durable than single-ply.

Satin lastex suits and the "dressmaker" suits of acetates and cottons were not tested because they are above the price range covered. According to an article from a textile trade journal, lastex bathing suits were well liked last year *except for their lack of durability*. If one is purchased, it is well to see that it bears a reasonable (and definite) guarantee.

All bathing suits will fade somewhat. Lighter colors generally fade more than darker ones.

The purchaser of a suit should know the measurements to which it must stretch to fit comfortably, and should measure it in the store. It is unwise to buy by marked size alone. Not only must the suit stretch, but it must also be elastic enough to fit snugly. A closely knit suit probably will be more elastic than a loose one.

Harsh wools irritate some skins; consequently the buyer does well to compare the feel of the inside surface of different suits and select a softer one. A wool suit lined with cotton should be satisfactory for those to whom any wool surface is irritating.

Since soft wools are wools of good grade, suits made from them are likely to be more satisfactory.

Women's Bathing Suits

Best Buys

Annette Kellerman (Asbury Mills, N.Y.C.). $2.95. Model tested had novelty knit; was skirted, had fitted top, with separate woolen lining in front only at top. Variety of models and colors available at same price. Good quality soft wool; good yarn strength; fit snugly; well constructed.

Montgomery Ward No. 20 B 5000, Spring-Summer 1936 Catalog (Montgomery Ward, Baltimore). $1.98 plus postage. Skirtless; halter-style top; two-piece effect; plain knit. Available in medium brown, medium or navy blue. Fairly good grade wool of fair yarn strength. Good value for price.

Also Acceptable

Nautical Togs (Greenhill and Daniel, N.Y.C.). $2.79. Skirtless; fitted top; ribbed knit. Good-grade, soft wool, fair yarn strength. Suit lined in front with cotton jersey. Loosely knit, consequently not snug fitting. Check measurements before buying.

Sears, Roebuck No. 18 L 1171, Spring-Summer 1936 Catalog (Sears, Roebuck, Chicago). $2.69 plus postage. Plain, skirted suit; plain knit; white belt. Quality of wool about the same as *Montgomery Ward No. 20 B 5000*. Snug but not well cut; tendency to gap.

B.V.D. Style No. 1 (The B.V.D. Co., Inc., N.Y.C.). $3.95. Novelty knit; skirtless; fitted top; no seams at side, only seam down back. Braided straps and belt. Low-grade, harsh wool, but suit entirely lined with cotton. Low yarn strength. Good style appeal. Fit very snug. Be sure of measurements before buying.

Not Acceptable

Jantzen "Bra-Tuck Mio" (Jantzen Knitting Mills, Portland, Ore.). $4.95. Novelty knit; skirtless; fitted top. Low-grade, harsh wool, separate part-wool lining only from waist to crotch in front. Low yarn strength. Suit judged to be of material sufficiently heavy to hold shape if originally tight enough; but if suit fits somewhat loosely to begin with, the material is not resilient or soft enough to be satisfactory.

Men's Bathing Trunks

Best Buys

Bradley (Bradley Knitting Co., Delavan, Wis.). $3.95. Good-grade, soft wool; good 2-ply yarn construction. Built-in lastex supporter.

Montgomery Ward No. 35 B 5209 (Montgomery Ward, Baltimore). $1.59. Harsh wool, good 2-ply yarn construction. Built-in lastex supporter. Loosely knit but not thin or sleazy.

Also Acceptable

These three suits are nearly enough alike in total rating so that the order in which they appear does not indicate different degrees of merit.

Lo-Wikies (Gantner and Mattern Co., Inc., San Francisco). $2.95. Harsh wool; poor yarn construction. Tightly knit. Built-in lastex supporter. Inside draw string at waist. Scantily cut.

Wikies (Gantner and Mattern Co., Inc.). $3.95. Slightly harsher wool than *Lo-Wikies;* good 2-ply yarn construction. Tightly knit. Built-in lastex supporter.

Jantzen "Half-Hitch" (Jantzen Knitting Mills). $2.95. Harsh wool; poor yarn construction. Tightly knit. Inelastic rayon and cotton reinforcement in front sewed at waist and crotch.

Not Acceptable

Travelo (Travelo Corp., Philadelphia). $2.94. Harsh wool; good 2-ply yarn construction. Built-in lastex supporter. Novelty knit of model tested too loose and thin to give good service regardless of yarn construction.

SUNBURN PREVENTIVES

Some do—

CONSUMERS UNION HAS TESTED fifteen brands of sunburn preventives sold in drug and department stores. Stripes and spots on the arms, backs, and abdomens of five staff members attest to the fact that twelve of the fifteen protectors didn't protect. Three did, however, successfully screening the skin from the ultra-violet rays.

Both natural sunlight and the light from a mercury arc lamp were used as sources for the ultra-violet light that is responsible for sunburn.

The first two subjects had their arms divided into test sections by adhesive tape. Each section was covered with a different lotion, and the area was then exposed to the light of a quartz mercury arc. Results of the test were easy to read on the striped arms.

With three of the subjects, backs and abdomens were used for the test, black crayon separating the areas to which the different lotions were applied. The result—a number of the staff members have backs marked like shooting targets, abdomens like baseball scoreboards, and arms striped in a manner similar to the traditional convict's garb. And the one dark-complexioned subject who was sure she would *not* burn even without the lotions, is now busily pulling off fragments of peeled skin after exposure for one hour.

There was complete correlation of results upon the persons tested. The areas covered by *Mulsitan* and *Dorothy Gray Sunburn Cream* showed no burning whatsoever. *Ardena Sun-Pruf Cream* permitted some penetration, as was evidenced by slight redness of the section covered by it. The area covered by *Ardena Sun-Pruf Cream* was not in any case, however, painfully burned. None of the other lotions tested offered any appreciable protection, and the subjects of the test complained that sections "protected" by these were as painful to touch as the completely unprotected areas.

Other Tests

The following liquids and creams were also tested to see if any could be used as sunburn preventives: lanolin, pure coconut oil, hand lotion, cocoa butter, vanishing cream, olive oil, cottonseed oil, glycerine, cold cream. Of all of these, lanolin, only, appeared to be of some slight value.

Mor-Tan, a lotion sold by the "reliable" department stores, deserves particular attention. According to its label, it "protects the skin from everything under the sun." Like other similar nostrums, *Mor-Tan* is "the discovery of an eminent physician." Its makers promise it will prevent not only

most don't

sunburn, but also blistering, windburn, freckles, and poison ivy, and relieve hay fever, nose and throat irritations, and external bleeding. If this is not enough, the label informs the prospective buyer that *Mor-Tan* will cause new skin to grow on burned flesh—and it is an effective mouth wash. Lest you are worried about appearance, *Mor-Tan* "does not interfere with make-up, and cannot be detected on the fairest skin." Since *Mor-Tan* is supposed to do practically everything, the manufacturer feels impelled to add that "*Mor-Tan* will not grow hair."

Mor-Tan was not tested for its effect on hair-growth, hay fever, or halitosis, but it didn't prevent sunburn.

Most people, if they have enough patience, can avoid sunburn and acquire a tan without the use of any lotion at all. A camp counselor, whose experience with large groups of children extends over a period of ten years, boasts that he has never yet had a case of sunburn among his charges. His method is as follows: On the first sunny day after the campers arrive, they are all allowed to lie on a dock, fully exposed to the sun, under careful supervision. When the first faint pink color appears on the skin of any

one of them, he is, like a half-done flapjack, turned over on his other side to be toasted. When the other side becomes faintly pink, the camper, like the flapjack, is removed from the fire. The camper is exposed to the same process the next day. By the end of one week the majority of children are able to stay in the sun all day without any ill effects.

Caution! Ordinarily it is difficult to detect the first appearance of a pink color. A detectable "pink" may quickly change into a bright red color, and prove to be a disagreeable burn. Until one is tanned, exposure to the sun should be limited to very short periods—in the case of most dark-complexioned persons, not more than an hour, and half that time for the average light-complexioned person.

It should be kept in mind that "too much of a good thing" is readily applicable to sun exposure. Protection of the skin with a lotion does not permit any person, whatever his physical condition, to stand hot sunlight for many hours with impunity. A lotion offers no protection against the heat effects of the sun, which can cause such drastic illnesses as sunstroke.

In using the lotions, one should remember that re-applications are necessary from time to time as the original wears off, or after bathing.

Sunburn Preventives

Best Buys

For Complete Protection

Mulsitan (The R. L. Watkins Co., N.Y.C.). 29c.

Also Acceptable

For Complete Protection

Dorothy Gray Sunburn Cream (Dorothy Gray, N.Y.C.). $1.

For Partial Protection

Ardena Sun-Pruf Cream (Elizabeth Arden, N.Y.C.). $1.

Not Acceptable

Norwich Sun Tan Oil (Norwich Pharmacal Co., Norwich, N.Y.). 20c.

Unguentine Skin Cream (Norwich Pharmacal Co.). 50c.

Not Acceptable (continued)

Nor Dex (Norwich Pharmacal Co.). 35c.

Plat-Num Sun Tan Oil (Plat-Num Laboratories, N.Y.C.). 10c.

Mystic De Luxe Sun Tan Oil (Mystic Laboratories, Inc., N.Y.C.). 10c.

Mystic Sun Tan Lotion (Mystic Laboratories, Inc.). 10c.

Sunfoe Lotion (Schieffelin & Co., N.Y.C.). 25c.

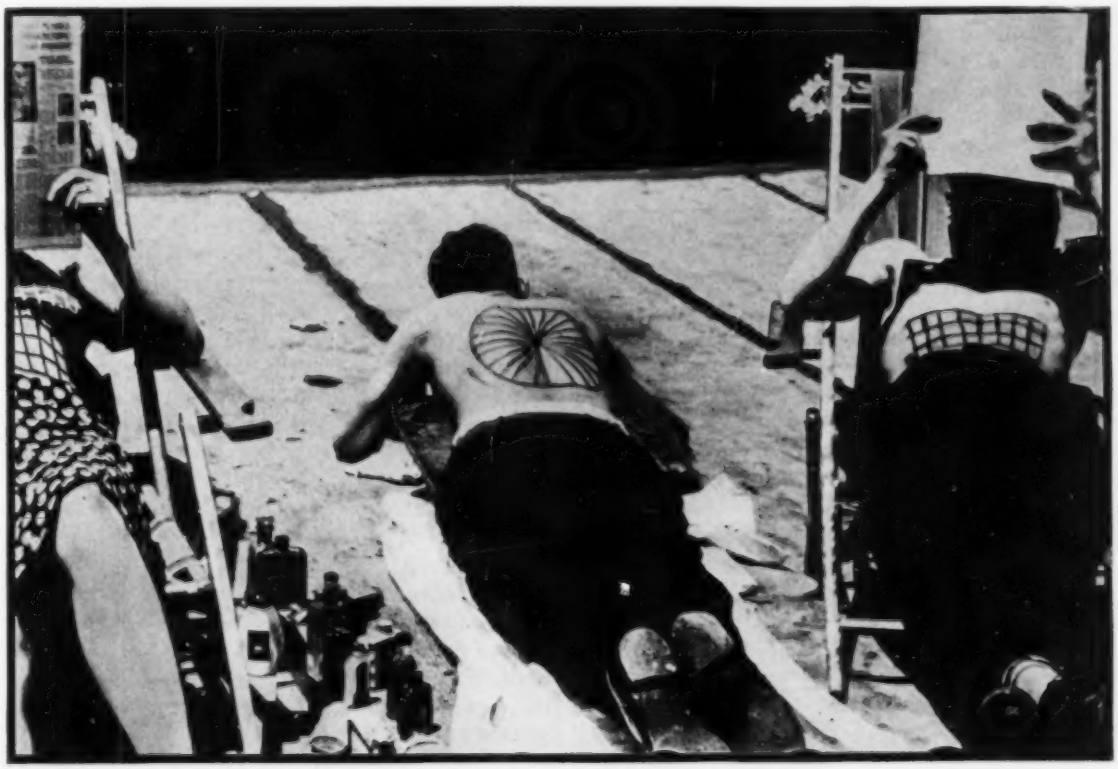
Helena Rubinstein Sunproof Cream (Helena Rubinstein Laboratories, Inc., N.Y.C.). $1.

Helena Rubinstein Sun Tonic (Helena Rubinstein Laboratories, Inc.). $1.

Tan Oil (Miami Beach, Miami Beach, Fla.). 10c.

Mor-Tan (Morton Laboratories, N.Y.C.). $1.

Noxzema Suntan Oil (Noxzema Chemical Co., Baltimore). 50c.



CU STAFF MEMBERS AT WORK.

How to buy

USED CARS

If you can't get a competent and trustworthy mechanic to help you select a car, insist on taking the car you are considering for a few days' trial and put it through the tests described below. The list of makes and models likely to be good buys will help you make a preliminary selection.

ALMOST EVERY NEW-CAR DEALER handles used cars at a loss. The dealer, therefore, must spend as little as possible in making used cars salable. The cheapest way to do this is to make a car's appearance attractive with polish or a cheap paint job, and perhaps with "good rubber." "Good rubber" is likely to mean not new tires but old ones retreaded or regrooved.

The dealer is not interested in increasing those "thousands of miles of unused transportation" which the used car is advertised as representing. He can't afford to be. In short, the phrase, "Let the buyer beware" applies with full force to used-car buying.

"Renewed and Guaranteed" "Safety Tested" or "Red Tag O.K." used-car merchandising plans should never be accepted as assurance that a car is in good repair. All used cars should be regarded with hard-boiled skepticism. A "free trial" offer gives an opportunity to make tests for gasoline and oil consumption, but usually commits the prospective buyer to purchasing one car or another from the dealer.

Beware of Guarantees

Beware of a money-back guarantee permitting you to drive a car for such-and-such a time, after which, if you don't like the car, you can *ask* for a refund of your money. This places on *you* the old "burden of proof" which makes so many guarantees next to worthless. Various forms of this same guarantee racket are: "You can try the car for such-and-such a time. If you don't like it, you can pick up another one"; or, "Our guarantees are like new-car guarantees" (the guarantee to replace defective parts free of charge during a stated period, except—and this is not emphasized—for the labor cost involved, usually the major part of the expense).

Unless the consumer clearly recognizes the year of a model by looking at it, he should ask to be shown the motor number (*a*) on the car and (*b*) in the identification section of the dealer's used-car book (if he has one), where it will appear under the year of manufacture. Note whether it came early or late in that year; the later the better.

If the dealer claims that repairs were made on a car, insist on seeing the repair order—preferably the one from which the mechanic worked.

Pay no attention to the mileage on the speedometer; owners of cars as well as dealers have been known to set back speedometers before selling their cars. In a case where one dealer sold a car to another, *each* set back the speedometer thousands of miles.

The best rough guide to the length of service and condition of a car is afforded by an inspection of the bumpers, the fenders, the pedal pads, and the floor mats. Hammered-out and repainted fenders seldom have the clarity of finish of the original, though the paint on them may be newer. A replaced fender, looking newer than the others, indicates in most cases an accident too severe to have permitted hammering out—an accident which may well have damaged front axle, frame, steering arm, or wheel alignment. Bumpers which have been bent and restraightened or which are still bent, especially in front, have the same significance. A hard blow may throw a front wheel out of alignment or even bend a rear axle shaft.

Worn-out pedal pads and mats indicate high mileage or hard service. If the pads or mats are new, the implication is even worse. Rusted, bent, badly worn, or generally neglected-looking spring shackles are a sign for caution. If they bear wrench marks or new cotter pins it is a good sign, provided the dealer has not merely made them very tight to avoid rattles. If this has been done, a road test will reveal hard, jerky riding on smooth roads.

Buy Recent Models

The majority of cars are traded in because repair bills have become or threaten to become, heavy. Each mile a car is driven brings nearer the time when new parts will have to be purchased and installed. In general, therefore, it is well to buy a used car for which parts are inexpensive; that is, a car of low price and large production. The best policy for the *average buyer* is to purchase a more recent model of a low-priced car, rather than an older model of a more expensive car which has now declined to the price the consumer intends to pay. In other words, money should be spent for comparative newness, rather than higher original cost.

The relatively higher cost of second-hand cars such as *Ford* or *Chevrolet* (compared with their cost when new) will in general be made up in lower up-keep and operating costs. Mainte-

nance on the larger, older cars is often very high; parts are expensive and frequently difficult to obtain. The miles per gallon of gas one is able to get from most of these old, over-weight cars is very low. Usually a larger quantity of grease is necessary for transmission and rear-end lubrication. A greater amount of anti-freeze is necessary in the winter for the larger radiators. License fees are also higher in those states where they are based on weight. Replacement of the storage battery may be almost twice as costly as for a smaller car.

In shopping for a used car, your task will be easier if you can decide beforehand what body model and what make you want, and then limit your search to this particular type. Do not let yourself be distracted by cars offered as "bargains." Bargains are very rare. Unless a dealer is most exceptional, he will try to sell a car for more than it is worth, not less. Be equally skeptical if a private owner offers you a bargain, unless he is a friend of yours and you know the car's history.

Naturally, the used cars to which your choice narrows down will not be in perfect condition. It is highly advisable to drive each one and attempt to find out what is wrong with it. What needs to be done now will inevitably have to be done sometime in the future if the car is kept for some time. If a dealer agrees to make repairs, secure his promise in writing before paying him a single dollar.

The driving tests given below will well repay the time spent on them; they are the next best thing to one's having the cars inspected by a mechanic whose advice has proved reliable and unbiased. If possible, drive the car you intend to buy at least fifty miles to determine gas and oil consumption and to bring to light troubles not otherwise detectable.

Look for Heavy Oil

Take out the oil dipstick before starting (while the motor is cold) and see if the crankcase oil is abnormally heavy. The use of thick oil to quiet worn parts and boost oil mileage is an old trick; thick or heavy oil increases wear and gas consumption, and makes starting difficult. Use of more than a pint of oil in fifty miles is excessive even on an old car. Before taking the car on the road, see that the tool equipment includes crank and tire- or wheel-changing equipment.

The Tests

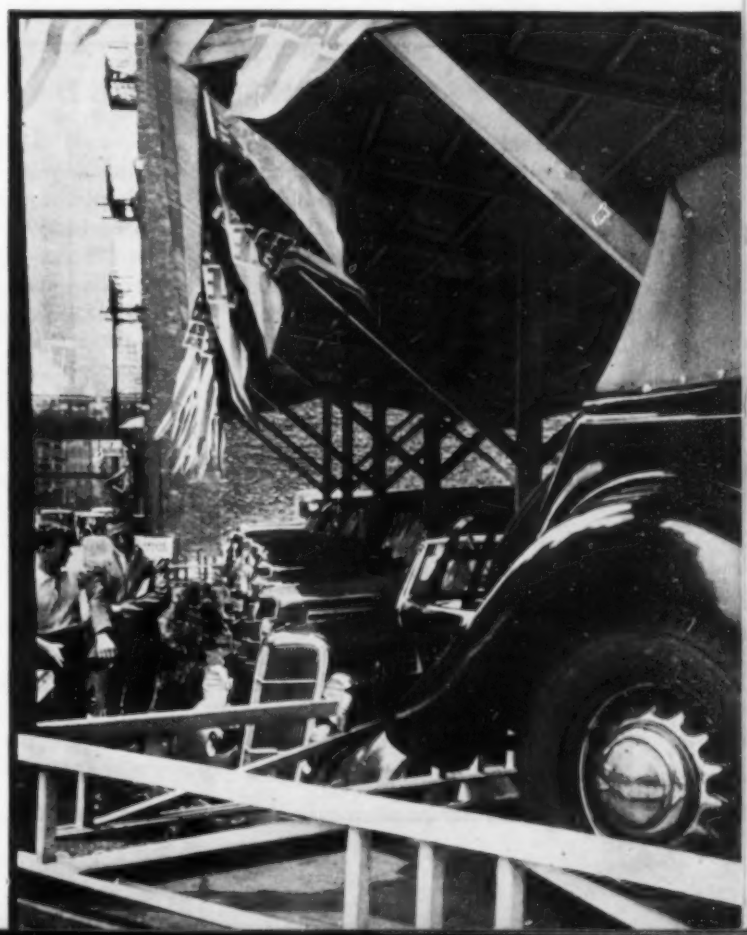
1. With the car's front wheels pointing straight ahead, stand at the left of the car and move the steering wheel back and forth with the thumb and forefinger, being careful that the front wheels do not move. If the free movement of the steering wheel, beyond which the front wheels move, exceeds two inches (measured on the rim), the steering gear or connections need adjustment to make the car steer safely.

2. See that the tires are evenly inflated. Grasp a front wheel at the top with both hands, and shake it back and forth. If slack is felt, accompanied by noise, either the wheel bearings need adjustment, or the kingpin bushings are worn, or both. After the dealer has adjusted the wheel bearings, test again for loose kingpins. Worn kingpin bushings make brakes drag, cause wheels to shimmy and lose their alignment, make steering hard, and sometimes cause the car to drift or sidle off the road. Wheels which are out of alignment cause rapid tire wear.

3. Get into the car and without turning on the switch step on the starter for an instant. Let the engine come to rest. Repeat ten times. Any burred or broken teeth on the starter flywheel will cause a clashing or grinding noise.

4. Start the engine. Release the brake. Disengage the clutch, put the gear in low, and with the engine turning slowly, remove the foot suddenly from the clutch pedal. If the universal joints are loose or worn or if the rear wheels are loose on the axles, a click will be heard under or at the rear of the car. Better still, jack up one rear wheel and with car in high gear turn the wheel back and forth. Motion of more than three inches indicates bad wear in universal joints and rear axles. Jack up both rear wheels, have the car run slowly in high gear, and see if the rear wheels run true. A bad wobble is caused by a bent axle shaft or a bent wheel.

5. Start engine. Put gear in high. Set brake hard. Speed up the engine



A GALLON OF GAS, A COAT OF POLISH, AND THEY'RE GOOD AS NEW.

moderately, and slowly engage the clutch. The engine should stall as soon as the clutch is fully engaged, unless the clutch is slipping. If it slips, do not buy the car unless the dealer agrees (in writing) to repair it, and be sure to test again after the repair has been made.

6. Restart the engine. (If the battery is weak, it will by this time crank the engine more slowly, though this is too rough a test to indicate that the battery will not hold a charge.) Put the car in low gear. If the clutch "grabs" —that is, if very little relaxing movement of your foot on the clutch suffices to engage it fully from the point where it begins to move the car—the clutch lining is probably badly worn, and will soon give out. Unless the driver is prepared for such a clutch, the car will usually start with a jerk.

7. Run the car up to fifteen miles per hour in low gear. If the transmission is worn it will howl or grind badly.

8. Drive in high up a moderate grade at about twelve miles an hour, pushing down the accelerator to maintain this speed. If the car bucks, hesitates, or skips, either (*a*) the distributor, ignition points, coil, or spark plugs are in bad condition, or (*b*) the valves need grinding. After the dealer has checked for these difficulties and made adjustments or repairs, test the car again on a moderate grade as indicated above.

9. Drive the car slowly on a cobblestone pavement or similar surface. Loose or worn parts, such as spring shackles, will rattle badly.

10. Drive about twenty miles an hour on a smooth, flat, uncrowned road. Release the steering wheel; the car should travel at least a hundred yards without drifting very far to either side. Be sure there is no cross wind. Try this several times. If the car drifts off rapidly, steering connections are loose or kingpins worn, or the axle has too little tilt. If the car drifts persistently to the same side of the road, the wheels are out of line, the axle bent, or one of the front springs weak. Spring leaves or the spring center bolt may be broken. A frame out of line as the result of an accident will produce the same result. If the car drifts badly, you'd better not take a chance on it.

11. Drive at forty miles an hour. Remove your foot from the accelerator, and allow the car to decelerate to about ten miles an hour. Step on the accelerator. If light-blue smoke appears behind the car, the piston rings or valve guides are badly worn and should be replaced.

12. Driving twelve to fifteen miles an hour, apply the brakes, with the left foot, harder and harder, meanwhile trying to maintain the speed of the car by pressing the accelerator with the right foot. If they are adequate, the brakes should prove the stronger in this contest. Do not stall the car, however, until the accelerator is all the way down. By this time you should hear a series of hollow, slightly muffled knocks, all of the same intensity, from the bearings. (Disregard any high, pinging sounds, from carbon or spark knock.) If the bearing knocks are not all of the same loudness, one or more bearings is loose. This is a severe test, but if any of the bearings knocks very loudly, you had best try some other car.

13. Turn sharp corners in both directions to see if the steering gear sticks at any point, as it will if it has been adjusted after excessive wear. Better yet, place a jack under the middle of the front axle and relieve the wheels of about half the weight; then turn wheels by means of steering wheel throughout arc of travel, from full right to full left, and see if steering gear turns with difficulty at any point.

14. Make routine tests of brakes for straight stopping. Refuse to accept any condition of mechanical brakes in which, trying with all your strength, you can push the brake pedal to the floor. With hydraulic brakes, push the pedal as far as you can with a hard pressure; hold the pressure steady for thirty seconds. If the pedal slowly recedes under the foot, the brake pistons leak, which means that the brake fluid is being lost. The dealer should be made to stand the expense of repair. Brake fluid is expensive, and so is piston replacement.

15. Make the usual tests of the riding and road-holding qualities of the car at good speed on a fairly rough road. Reject any car which displays an affinity for one ditch or the other (brakes not applied). Combined with "tramping," this may indicate a broken or inoperative shock absorber, but there are other causes more difficult to cure. Reject likewise any car which, slowing down without the brake, produces a grinding noise in the rear axle.

Any car which will pass these tests, or similar ones devised by a trustworthy mechanic, and which is listed

TERMS USED

Wheel Alignment: The adjustment of the front wheels to make them toe in slightly, and the setting of the distance between the bottom of the front wheels so that it is somewhat less than the distance between the top (known as *camber*).

Kingpin Bushings: The brass or bronze bearings on which the front wheels pivot when steered.

Spring Shackles: The movable links which connect the springs to the axle or frame, and allow them to flex.

Spring Center-Bolt: The bolt which passes through the spring leaves and ties them together at the center. If once broken, the leaves will usually break soon after.

Universal Joint: A double-hinged joint which enables the power of the engine to be transmitted to the rear axle at the varying angles caused by the up-and-down motion of the axle with respect to the car.

Shimmy: Violent oscillating side-to-side movement of the front wheels caused by a loose steering system or loose or badly worn front wheel bearings, etc.

Tramp: Violent, alternating movement of the front wheels in a vertical plane, racking the whole front of the car. The driver has little control of either shimmy or tramp, and can only slow down. Both are dangerous at high speed.

here as a *Best Buy* or as *Also Acceptable* should give reasonably good service at reasonable repair cost. Buyers should bear in mind in connection with the listings, that the service or abuse which a car has been through is far more important in determining its condition than any question of make. The listings are submitted, however, with the belief that, other things being equal, the buyer's chances for obtaining a satisfactory car are better if he selects one from the list of *Best Buys* or *Also Acceptable* cars. Models from 1931 to 1935 are included, unless otherwise specified. For 1936 used cars, see the Consumers Union report (June, 1936) on such cars when new. All cars on the *Also Acceptable* list should, when properly tuned, exceed fifteen miles per gallon at thirty miles an hour. Cars are rated *Not Acceptable* for three reasons: some are mechanically faulty; some are no longer represented by solvent manufacturers; and some are merely too large and heavy, costing too much to run and repair, for the average consumer's pocketbook. The latter are so marked in the listing.

Used Cars (1931-1935)

Best Buys

Plymouth, except '34 *De Luxe*, which had unsatisfactory road-holding qualities, due to independent springing. Check for oil consumption.

Oldsmobile 6. Check models with independent springing carefully for poor steering and worn front-wheel bearings (test No. 10).

Also Acceptable

(*In estimated order of merit*)

Chevrolet, except '34 *Master* which had unsatisfactory spring action and high tire wear due to knee-action suspension. Check clutch carefully (test No. 6).

Ford. Avoid '32 and '33 *V-8s* unless they have factory-rebuilt motors, changed to prevent the high oil consumption of the regular-production engines. (The engine and accessory unit exchange plan of the Ford Company, by which accurately conditioned parts replace worn ones at low cost, is endorsed by all impartial mechanics. It protects the owner of a used *Ford* against charges for ceaseless tinkering by incompetent mechanics.

Dodge 6. Check for oil consumption.

Pontiac 6, '31, '32, and the '35 model without knee-action. The '35 model with knee-action is not a good purchase.

De Soto 6, from 1932 on.

Hudson 6, '35 only. (Avoid "axleflex" front axle.)

Hudson 8, from '34 on. (Avoid "axleflex.")

Terraplane 6 and *8* beginning with late '33. (Avoid "axleflex.")

Studebaker 6. On '31 *Studebakers* the free-wheeling unit cannot be permanently locked out; it is therefore necessary to make sure it does not slip owing to wear. Test it under as cold conditions as possible, as thick transmission lubricant helps to make it slip. It should re-engage promptly when the accelerator is pressed after coasting in free-wheeling.

Oldsmobile 8, '32.

Pontiac 8, late '33, with large starter; also '35.

Chrysler 6.

Buick 8, Series 40 only (late '34 and subsequent).

Studebaker Dictator 8, '31 and '32 only. Comments on free-wheeling unit of '31 *Studebaker 6* apply to '31 *Dictator 8*.

Lafayette. Check transmission carefully (test No. 7, low and second).

Graham 6. Avoid '31 Model 621.

Rockne 6, Model 75 only.

Essex, '32 only.

Nash 6, beginning with '34.

Not Acceptable

(*In alphabetical order*)

Auburn, all models.

Austin.

Buick,* except model 40.

Cadillac.*

Chevrolet, '34 *Master*.

Chrysler 8.*

De Soto, '31.

Essex, '31.

Ford V-8, '32 and '33 unless with factory-reconditioned motors.

Hudson 6, '31 to '34.

Hudson 8, '31 to '33.

Hupmobile.

La Salle.*

Lincoln.*

Nash 6 prior to '34.

Nash 8.

Packard.

Pierce Arrow.*

Plymouth, '34 *De Luxe*.

Pontiac 8, '31, '32, early '33, '34 (the first knee-action model).

Reo.* Avoid cars with "self-shifter."

Rockne 6, except Model 75.

Studebaker 8,* except '31 and '32 *Dictator*.

Terraplane 6, '32 and early '33.

Willys 4 and *6*.

Older Used Cars

Many persons find it financially impossible to buy second-hand cars of models as late as 1931. Additional ratings on older cars are therefore given. The precautions previously outlined in this report should be adhered to even more carefully than with newer cars.

The problem of buying old cars, that is older than 1931, is largely one of finding a model which has suffered less than normal deterioration. The buyer cannot expect too much, but he must be very careful if he does not wish to start spending money for repairs. Efforts should be made to find one of the following, taking special precautions to see that the brakes are in good mechanical condition and are operating satisfactorily:

Ford, Model A, '29–'30. The brakes were pretty bad, but the car was tough, and parts, if they have to be bought, are cheap.

Olds 6, '29–'30. Bad brakes, but otherwise very good. Avoid '28, which had weak rear end.

Reo Flying Cloud 6, '27–'30. Equipped with Lockheed internal brakes, and a very tough engine. Rather high gas consumption, due chiefly to a carburetor which loses adjustment when worn.

Oakland All American 6, '29. A very long-lived model. Brakes better than average.

Hupp Century 6, '28–'29. Hupp's last successful year, and the product justified it. Brakes fair to good.

Chrysler, 70 and 77, '29 and '30. Aluminum pistons may be badly worn. Four-speed transmission should be carefully tried out to see that it has not gone bad.

* Expensive to operate, otherwise acceptable.

MOTOR OIL

Tests of many brands of motor oil show some inexpensive ones to be best buys.

MOTOR OILS OF EXCELLENT QUALITY can be bought at low prices; to buy expensive oils is a waste of money.

This statement is based on a study of thirty-five brands of oil. In no case did the most expensive oils possess desirable qualities that could not be found in several of the cheaper ones.

It is advisable to use the lightest (lowest SAE number[1]) oils which give good lubrication. Slightly greater consumption of oil will be more than offset by the lower consumption of gasoline when light oils are used. SAE 30 oils are considered generally satisfactory for summer use, and 10 W and 20 W oils for winter, provided piston clearance is not so great as to cause noticeable "slap," in which case a heavier oil is needed. All the oils tested were SAE 30.

No oils are rated as *Best Buys* which were not paraffin base oils. Paraffin base oils are considered to have the greatest endurance and stability of all oils used under fairly high temperature conditions. All Pennsylvania crude oil is paraffin base.

Stress is laid on the change of viscosity (rate of flow of the oil) with temperature, because it is important that an oil shall not become too thin and "watery" as the engine heats up. Therefore, no oils which become much thinner with increasing temperature are given high ratings.

Tests were run on a few samples without brand name sold at filling stations for ten cents a quart. All of these were found to be of poor quality.

For economy, purchase the *Best Buy* lubricating oils in large quantities, two to five gallons. Keep the crankcase properly filled, changing the oil completely only with the change in seasons, when a lighter oil must be substituted for a heavy, or vice-versa. Following the recommendation for changing the oil in the crankcase every 500 or 1,000 miles of car operation is a very expensive procedure and not necessary for adequate and safe lubrication. Members of the Consumers Union staff regularly have driven their cars 5,000 miles and more without change of oil.

If driving is done under particularly dusty conditions, however, it is advisable to drain the oil at intervals of about 2,000 miles and let it settle for at least three hours. (The draining should be done immediately after the engine has been running for a while and is hot.) Then most of the oil should be carefully poured off (to place back in the car) leaving the sediment in the bottom quart.

Many station attendants very often try to sell oil when it is not needed. The attendant should be watched to see that he inserts the measuring rod completely. It is not necessary to add oil unless the level is near the lower mark on the rod.

The prices given are for quart purchases unless otherwise stated. Purchasing oil in one-quart lots, particularly the canned variety, is usually expensive. You can make considerable savings in the course of a year by buying in larger quantities and putting the oil in the crankcase yourself.

[1] SAE numbers refer to standard viscosity designations established by the Society of Automotive Engineers and generally recognized in the petroleum industry.

Best Buys

Wards 100% Pure Pennsylvania (Purchased at Montgomery Ward retail store, Chicago). 13.8c. a quart in five-quart lots (plus postage).

Travelene (Strauss Stores Corp., N.Y.C.). 16c. a qt. in 2-gallon lots.

Cross Country (Sears, Roebuck and Co., Chicago). 17c. (plus postage).

Also Acceptable

Penn-Coop (Address of nearest retail-cooperative distributor obtainable from Eastern Cooperative Wholesale, Inc., 112 East 19 St., N.Y.C.). Retail price, about 24c. Test indicated paraffin base oil.

Tests indicated mixed base for the following:

Paratex (Paragon Oil Co.). 12.5c.

Demand (Continental Oil Co.). 13.5c. a quart in two-gallon lots.

Unique (Phillips Petroleum Co.). 16c.

Macy's Re-refined Motor Oil (R. H. Macy & Co., N.Y.C.). 16.2c. a quart in two-gallon lots.

Motorine (Continental Oil Co.). 20c.

Polarine (Stand. Oil of Ind.). 21c.

Derby (Derby Oil Co.). 25c. a quart in five-quart lots.

Lubrite (Socony-Vac. Oil Co.). 25c.

Essolube (Col. Beacon Oil Co.). 25c.

Tydol (Tide Water Oil Co.). 25c.

Amoco (American Oil Co.). 25c.

Iso Vis "D" (Standard Oil Co., of Indiana). 26c.

The quality of the following oils was found satisfactory, but the price was considered too high—tests indicated all but* Phillips, Conoco, *and* Esso *had paraffin base.

Veedol (Tide Water Oil Co.). 30c.

Shell-Penn (Shell Oil Co.). 30c.

Mobiloil (Socony-Vac. Oil Corp.). 30c.

Phillips 66 (Phillips Petro. Co.). 30c.

Conoco Germ Process (Continental Oil Co.). 32c.

Kendall (Kendall Refining Co.). 35c.

Valvoline (Valvoline Oil Co.). 35c.

Wolf's Head (Wolverine-Empire Refining Co.). 35c.

Esso (Colonial Beacon Oil Co.). 35c.

Quaker State (Quaker State Oil Refining Corp.). 35c.

The following oils were found to be good quality, paraffin base; but were misbranded in that the oils were lighter than the SAE 30 for which they were sold:

Penn-Rad (Radbill Oil Co.). 13.4c. a quart in two-gallon lots.

Pennzoil (Pennzoil Co.). 35c.

Not Acceptable

Belmont (Strauss Stores Corp.). 9.3c. a quart in two-gallon lots.

Commander (Montgomery Ward). 8c. a quart in two-gallon lots.

Actol (Colonial Beacon Oil Co.). 12.3c. a quart in two-gallon lots.

Shell (Shell Oil Co.). 25c.

Texaco (The Texas Co.). 25c.

Tidex (Tide Water Oil Co.). 15c.

Sunoco (Sun Oil Co.). 25c.

TRAVEL
—*advice for beginners*

IT IS DIFFICULT FOR ONE TO GIVE advice on travel without first seeing the traveler. Sleeping in Tyrolean haylofts may be a great lark for Princeton undergraduates, but it's no fun at all for a dignified dean of women.

There are plenty of ways to travel cheaply and see the world on an almost empty purse, but most of us are not quite ready to do our adventuring in the first person. We'd rather read about how Richard Halliburton swam the Hellespont or how Harry Franck slept with the cows, while we see the world from the luxury of a lower berth.

Many of us have funny complexes; one of the funniest is that millionaire delusion which strikes us when we travel. We may live at home in a modest, frugal way, but somehow we never think of traveling that way. Most people are said to travel, not to reach a definite goal, but merely as a release from the bounds and known monotony of home and occupation, which may explain our impulse to act a part and pretend to be someone we are not.

If one is traveling, not to see the world, but only for change and for companionship, short cruises to the West Indies, to Alaska, or on the Great Lakes are worth considering. The cost of all West Indies cruises, for example, is about the same—$12 or so per day for a minimum-rate berth, and up to nearly double that for the best room on the ship.

If you haven't much money, don't waste it on your cabin. You don't live in the cabin; unless you are sick, you are there only when you are asleep or changing your clothes. If you are sick, nothing matters—you can be just as sick in the most expensive cabin as in the cheapest, and you probably will not be sick very long.

As for ships, choose one of the newest. The new ships are fast, and the ships with the greatest speed will visit the most ports and give you the most hours on shore. Lloyd's Register of Shipping, 17 Battery Place, New York City, will give you impartial information on the size, age, and speed of any steamer.

Trunks are out. Two large bags will easily hold the wardrobe for a West Indies cruise. Be sure to buy baggage insurance—it costs little and is worth a lot if the salt water spoils some clothes.

If you play or sing, be sure to take some music along, and remember that there is always a fancy-dress party, so be sure to include the makings of a costume.

Your deck chair is not important, but your table seat is. If you are traveling alone, you will have a better time if you are seated at a large table with six or eight people than if you are two or four together. Insist that your travel agent give you a letter stating that you will be seated at a large table.

On most West Indies cruises, shore excursion tickets are sold in advance and also on shipboard. Better wait till you get on the ship and find out what your table companions plan to do.

On the first day out, unpack your bags and hang up your clothes in the wardrobe. Get acquainted with your roommate if you have one. Ring for the steward or stewardess and arrange for the hour of your morning bath. Find the deck steward and locate your deck chair. Go to the chief steward's office and confirm your dining-room table reservation.

If it is your first cruise, you will probably feel so lost and lonesome at first that you would go home if you could, but fortunately you can't. By the fourth or fifth day you'll be feeling like a million dollars.

Don't start out ordering everything from soup to nuts just because it's on the menu. Just nibble around for the first couple of meals till you get your sea legs. Be patient and tolerant of your fellows, and take things as they come. Don't worry if the ship is late,

or it rolls, or your bag is gone. Given time, things adjust themselves, and the lost bag always turns up.

If Europe is your goal and economy your keynote, consider third class on one of the new modern steamers. Third-class cabins on these new ships have hot and cold running water, forced draft ventilation, reading lights, and other appointments nearly as good as first-class on the older ships.

The difference between third-class and first-class fare on the Normandie, for example, is $170, and the journey to England takes only five days. With this $170 you have saved, you can live nearly six weeks in any of the Scandinavian countries.

Among the countries in which travel is cheapest and most comfortable today are Norway, Sweden, Denmark, and Finland. There is also much of current interest in their highly developed cooperative movements and forward-looking social institutions. If you wish to go to Soviet Russia, the goal of many thousands who want to see at first hand what is being accomplished there, it is possible to travel from London to Leningrad second class by boat and train for about $50, with plenty of time to stop in Copenhagen, Stockholm, and Helsingfors along the way; and for a little more you can include Norway.

Always remember that the expensive part of traveling is the traveling and the cheap part is staying in one place. Therefore, loaf along for a week in each big city. Plan to do your traveling in the daytime and save the cost of sleepers. To travel cheaply you should not plan too far ahead; keep your arrangements flexible.

Finding Cheap Hotels

The little cheap hotels and pensions do not advertise and are not, as a rule, listed with the big travel agencies. You have to find them. How? By asking. You start out, for example, at the Hotel Howard in London. When you are ready to move on you ask the manager to recommend a cheap, centrally located hotel at the next city on your route. He will be glad to oblige and will probably forward you to a friend in the next town. Also talk to your fellow travelers. Europe in the summer is full of Americans who know the ropes.

Choose a centrally located hotel to save taxis, and take room with breakfast only. This leaves you free to dine out when and where you will. Carry your funds in travelers checks of small denominations so that you will not get too much of the money of any one country. Always carry a few one-dollar bills for emergencies; United States money is universally accepted in Europe and you can change a dollar bill almost anywhere with small loss on the exchange. Try not to look like a millionaire and you will not be overcharged.

All that has just been stated applies equally well if you choose to travel in Holland, France, or Switzerland, although travel costs are definitely higher in these countries. This higher cost is offset somewhat in France by tourist discounts on French railways. You can save $9 on your British visa by traveling on a through steamer ticket to some continental port, for example, Copenhagen or Havre, and breaking your journey for a few days in England, in which case your British transit visa is only $1. Your other European visas will cost little.

If You See America First

As for travel at home, nothing is quite so economical and satisfactory as an automobile tour. If you own a car (or can borrow one) and can find two or more congenial persons to go along and share the costs, you should manage to travel on an operating budget of about $2.50 per day per person. This should cover gas and oil but, of course, does not include any part of the investment in the car itself.

Many thousands of families now roam the scenic highways, avoiding the cities and living in, if not on, the country. They dress for the outdoors and avoid hotels. They sleep where the villagers display the familiar sign, "Tourists Accommodated," or camp in tourist cabins along the shores of lakes, or on hills overlooking wide valleys. They dine in one of the hundreds of roadside eating places, or with the farmer's family, or they carry their own equipment and prepare their own meals at stopping places.

Travel by Bus

If you are not so fortunate as to command a car, or even a seat in a car, the commercial motor bus is, from the economy angle, probably the second choice. In the motor bus your route usually is limited to the main highways; your schedule is less flexible; and you do not have the wide choice of places to stop overnight. The motor bus is a cheap way to reach a given destination, but bus travel as such offers no great attraction to the average vacationist.

One of the big tourist bureaus in New York (Tauck Tours, Inc., 9 East 41 Street) is now offering a series of motorcoach vacation tours which are planned to cover a given scenic area in the usual vacation period of one or two weeks. These trips are so arranged that the lunch and evening stops are made at the most interesting places and hotels, and meals are covered in the inclusive rate. These motorcoach vacations are reported on favorably by some who have taken them.

Train travel is now becoming more popular owing to the reductions in fares and many innovations planned to make life pleasant for the traveler of limited means.

The Union Pacific, among the Western roads, leads with tourist sleepers, fast trains, low-cost meals, trained nurse service, and "women's de luxe coaches," with fares (Chicago to Los Angeles, $34.50) almost down to bus levels.

IN THE NEXT ISSUE:

OIL BURNERS AND STOKERS

Should you buy an oil burner or a coal stoker? A report on oil burners and stokers in the August issue will help you answer this question. Leading makes will be compared and rated as *Best Buys*, *Also Acceptable*, and *Not Acceptable*.

LAUNDRY SOAPS

What soaps are safe for silks and other fine fabrics? A report on bar, chip, bead, and powdered soaps will provide the answer.

HOSIERY

Reports and ratings on *Kayser*, *Phoenix*, *Gotham*, *Van Raalte*, and many other leading brands.

And other reports and articles.

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By IRA COTINS
Cooperative Distributors

The story of a unique cooperative, with a nationwide membership, selling many kinds of consumer goods by mail order.

TO THE MAJORITY OF AMERICANS, consumer cooperation is still a strange and almost foreign idea. Without entering into detailed explanations, it is sufficient to say that in the earlier period of American development the mobility of a pioneering population operated to prevent the growth of cooperative institutions, and in the later period the increasing dominance of chain-store distribution has made it difficult for store cooperatives to get started. Whereas in Europe the cooperative movement developed in urban areas with the full support of the trade unions, American cooperatives have developed largely among farmers. It is only recently that genuine consumer cooperatives have begun to obtain a foothold in the cities.[1]

In this field, Cooperative Distributors has attracted wide attention. CD is a consumers cooperative society operating on a nationwide mail-order basis. It is successfully demonstrating the possibilities in mail-order distribution by cooperative methods. Besides distributing general merchandise, CD is sponsoring the organization of local Consumers Clubs. Some sixty-five of these are now in operation, laying the necessary educational and organizational groundwork for the later spread of genuine cooperative stores, filling stations, and other cooperative enterprises. Where local cooperative societies and cooperative wholesales already exist, CD encourages its member clubs to support them with their purchasing power.

A Cooperative Purchasing Agent

Cooperative Distributors serves as a cooperative purchasing agent for its members, who buy either individually, at members' prices, or through their Consumers Clubs, at wholesale prices. Because it operates on a nationwide basis, CD does not follow the usual cooperative practice of charging members current market prices. Prices on identical articles vary in different parts of the country. Therefore it is CD's policy to charge a price low enough to compete successfully with the prevailing prices for goods of equal quality over most of the United States. In the case of many toilet articles and other goods for which consumers must ordinarily pay excessive prices to cover advertising ballyhoo and the enormous profits extorted through use of highly puffed trade-marks, CD is able to offer its members prices considerably below the current prices for products of similar composition. Members of Cooperative Distributors are given a preferential price on individual purchases, but even the higher non-member prices frequently meet competitive price levels.

Cooperative Distributors is owned by a growing membership, who join it either individually or through Consumers Clubs. Individual membership is acquired through the purchase of one $5.00 share of stock which gives the member one vote in CD's cooperative management. The Consumers Clubs which CD, as the parent cooperative, helps organize and serves, are on a dues-paying basis. Members pay $3.00 per year, of which $2.00 is retained by the club and $1.00 allocated to CD. This entitles individual club members to members' prices for CD goods, and the club to wholesale prices on minimum orders.

All members receive the *Consumers Defender*, in which topics of interest

[1] For information on the extent and growth of the consumers cooperative movement in the United States, write the Cooperative League of U. S. A., 167 West 12 Street, New York City.

to members are discussed and CD's products are listed and described. The CD member finds here a marked contrast to the glowing blah of the usual mail-order catalog. Instead of a conglomeration of articles, each of "supreme quality" and extra-extra better than all of its neighbors on the page put together, he finds an orderly listing of products, each described as clearly and definitely as possible, with its defects noted along with its excellences. Being owned by the members who purchase through it, and operated for their benefit, CD has nothing to gain through indulging in the meaningless verbiage with which goods distributed for profit are advertised.

Cooperative Drugs and Cosmetics

In no other field has there been grosser exploitation of the consumer than in drugs and cosmetics. The cost of advertising such goods is regularly from one-fourth to one-third or more of the amount the consumer pays for them. Through such advertising, consumers are made to believe in the exclusive excellences of particular brand names and the special efficacy of secret but "scientific" ingredients, and can thus be made to pay monopoly prices—including monopoly profits. Here CD has made a major contribution. It offers a line of drug sundries and cosmetic products, many of which are manufactured according to carefully selected formulas, which it distributes with contents openly stated and without benefit (and expense) of advertisers' pseudo-scientific ballyhoo. Prices are naturally much lower than those of the advertised brands, and consumers know what they are buying.

In many fields of consumer products CD has been handicapped by the lack of any suitable technical standards in the sources of supply. In such fields, CD especially welcomes the cooperation of Consumers Union in undertaking laboratory investigations and developing proper standards of quality.

But in all merchandise which it carries, Cooperative Distributors investigates the market, seeking the highest quality available at a price which its members can afford to pay. As an adjunct to the purchasing department a laboratory is maintained, which has set up specifications for certain products, such as tooth powder, shaving cream, and cosmetic products in general. In the case of various other products—shirts, soaps, and electrical equipment, for example—comparative tests are made of goods available, before any are purchased. While the laboratory is limited in size, and is sometimes guilty of the errors which invariably occur where a laboratory pioneers in such an undeveloped field as the building up of quality standards, it does offer members a degree of technical selection of their purchases which no individual and no group lacking laboratory facilities can enjoy. CD members thus have the benefit not only of the savings which collective buying makes possible but also, in many cases, of the assurance of quality which can come only through laboratory selection of products.

In addition, CD suppliers must show that they maintain decent conditions of labor, the preference being given to union shops. CD recognizes that the maintenance of adequate standards of living for its members and for all consumers depends first of all upon the maintenance of high standards of wages and working conditions. CD will not distribute products of sweatshop labor.

An interesting aspect of the development initiated by Cooperative Distributors is the collective bargaining agreements entered into by its member clubs, which are essentially local unions of consumers bargaining collectively with local suppliers. By concentrating the buying of their members and controlling prices, quality standards, and labor conditions by carefully written contracts, CD Consumers Clubs are able to return savings dividends to their members running as high as ten or fifteen per cent. Such collective bargaining agreements cover a wide range of regularly purchased products and services—coal, ice, milk, laundry, drycleaning, automotive service, groceries, gasoline, oil, and many others not suitable for mail-order distribution or not available from nearby cooperative wholesales.

Consumers and Labor

Objection is sometimes made to these Consumers Club contracts on the ground that they inflict hardships on local dealers and their workers. On the contrary, CD Consumers Clubs have a salutory effect upon the local distributive set-up. The supplier benefits because his business is stabilized by his contractually assured income from the club membership. The suppliers' employees benefit because CD clubs are bound, by charter and by-laws, to apply the pressure of their collective buying power for the benefit of workers as well as of their members as consumers. Many a coal or milk dealer has been startled to find that he could obtain a highly desirable contract with a Consumers Club only on his agreement to liberalize his labor policy and improve the conditions of his employees.

Finally, the club members benefit both because they get specified qualities at less than market prices and because they receive valuable training in the basic principles of cooperation. Besides their collective bargaining agreements, Consumers Clubs also act effectively as pressure groups seeking the correction of economic and political abuses affecting the consumer.

Cooperative Distributors believes that joining a pro-labor distributing service such as it and its member clubs offer, along with a factual information service such as is supplied by Consumers Union, is an effective way for consumers to undertake to raise their standards of living.

The article on credit unions in the May *Reports* and the above article on Cooperative Distributors are the first two in a series describing the work being done by consumers through cooperative organizations.

Consumers Union is planning to include in its tests an increasing number of cooperatively distributed products, and is attempting to make contact with many cooperatives to learn what products they handle. As our facilities expand we hope to broaden our aid to cooperatives by offering them special advice and assistance on technical problems, in this way helping them maintain high standards of quality. Cooperative efforts offer consumers an immediate means of getting honest products at fair prices, and Consumers Union will do everything in its power to aid these efforts.

A Good Mechanical Pencil

IN MECHANICAL PENCILS, AS IN SO many other products, there is no relation between price and quality. Apart from the question of appearance, the ten-cent-store pencil may be a better value than the dollar pencil purchased in a department or stationery store.

A well-designed refill or "automatic" pencil will have the following characteristics:

1. Positive grip of the lead so that it may be drawn back as well as pushed out.
2. Designed to take long leads (4 in.). Much inconvenience and waste of lead results from use of short leads. Lead often runs out at a moment when one cannot take the time to refill the pencil. Also, the last eighth- or quarter-of-an-inch of lead usually drops out and cannot be used.
3. Large lead-supply chamber.
4. Provided with large, standard-size replaceable rubber eraser.
5. Strongly constructed, with no parts so thin or weak that they break or wear out quickly under even the most severe usage.
6. Inexpensive—there is no reason why an article of this kind produced in large quantities should not sell for a few cents.

There recently appeared on the Woolworth counters a pencil, figure A, with most of the above good qualities. Figure B is a type that is commonly sold, while C and D are widely advertised automatic pencils and much more expensive and unsatisfactory in certain respects.

Best Buy

Wearever, (of the type illustrated in Fig. A) (distrib. F. W. Woolworth Co., and G. C. Murphy Co.) 20c. (distrib. also by stationery stores) about 25c. Contained 12 long leads (worth 20c at the usual rate—6 for 10c). Large size rubber eraser. Rugged construction. Examine several pencils before buying one. In some the lead does not move in and out smoothly. Replacement erasers can be purchased in stationery stores at 6 for 10c.

Also Acceptable

Merit Pencil Set, No. 64-42 X, Fig. B (American Lead Pencil Company, New York, distrib. F. W. Woolworth Co.) 20c. Supplied with three extra erasers and six long leads. Poorly designed in that it has no supply chamber for leads.

Eversharp, Fig. C (Wahl Co., 1800 Roscoe St., Chicago) 49c. Three extra erasers. Supply chamber provided for four long leads, but none came with pencil. Nine long leads are supplied for 10c extra if bought with pencil, priced at 15c if bought separately.

Not Acceptable

Autopoint, Fig. D (Autopoint Co., 1807 Foster Ave., Chicago) $1.00. Supplied with medium size eraser and 10 short 1⅜ in. leads. Has no positive grip on the lead which can not, therefore, be drawn back into the pencil. Not well designed in spite of its "gold filled" clip and trimmings.

(*Continued from Page 2*)

lavender oil, and menthol. The cost of the ingredients was about 2 cents per bottle. *Good Housekeeping* approved the claim that *Vapex* vapor kills germs in the breathing passage. But the government said that this claim "was false and fraudulent, since the article contained no ingredient or combination of ingredients capable of producing the effect claimed."

Lysol—approved by *Good Housekeeping* as a safe and effective germicide and contraceptive (the advertising doesn't, of course, use the word contraceptive): "Safety—it is gentle, soothing, refreshing" says a *Good Housekeeping* ad. *Facts and Frauds in Woman's Hygiene* by Palmer and Greenberg (Vanguard Press, New York: 1936) reports a number of deaths from poisoning resulting from the use of *Lysol*, and quotes medical authorities to prove both its unreliability and its hazardous nature.

Oyloff Dry Shampoo—approved by *Good Housekeeping* as an "amazing new liquid" for use as a "dry shampoo." This amazing new liquid (selling for $1 per bottle) was found to consist essentially of water, perfume, coloring matter, and a little salt.

Grayban—advertised in *Good Housekeeping* as a "miracle of science" which would bring back natural youthful color to gray hair. The American Medical Association analyzed *Grayban* and found that it was an ordinary metallic hair dye of a type which had been known and used for years.

Dozens of such cases could be cited from almost any issue of *Good Housekeeping*. These few are evidence enough that the Good Housekeeping Institute is indeed a fraud.

It is worthy of mention that four makes of refrigerators —*Crosley, Coldspot, Westinghouse,* and *Fairbanks Morse* —found *Not Acceptable* as the result of tests and examinations by Consumers Union's refrigeration consultants bear the Good Housekeeping Seal of Approval.

THE COOPERATIVE PLANK

Some time ago the rumor was general that one or both major political parties would include a pro-cooperative plank in its platform. The coming and going of the conventions showed that the rumor was poorly founded. The Democrats, it is true, "favor encouragement of sound, practical *farm* cooperatives" (italics, ours). This may be a bid for a few extra farm votes; it is hardly an endorsement of consumer cooperation in principle as a way of achieving their promised "decreased spread between the price [the consumer] pays and the price the producer receives."

Since the Democratic convention, Mr. Roosevelt has announced the sending of an "Inquiry" to Europe to investigate the cooperative movement there, to see whether it is possible that the presence of strong cooperative movements in the Scandinavian and other countries has anything to do with their sticking by democracy. Such an inquiry makes good campaign material even if nothing is ever done with the findings.

Consumers would do well to demand something more than a vague statement of interest in their welfare and a Hooverian committee to study what is being done in Sweden. The political parties should be made to promise the enactment of legislation written by cooperative leaders, to encourage and facilitate the development of cooperatives by consumers.

Now that the latest Copeland food, drug, and cosmetic bill has died with the adjournment of Congress, consumers should also demand the clear-cut promise of a new food, drug, and cosmetic law written by consumers and not by the food and drug lobbies, and guaranteeing to protect consumers instead of medicine advertisers.

More important still, consumers should demand for their own protection an out-and-out promise that their rights as workers to organize and bargain collectively with their employers shall be supported by legislation bringing swift and heavy punishment to employers who attempt in any way to interfere with those rights. For only through their ability as workers to command a fair wage can consumers be assured of their ability to consume.

THE RIGHT TO PICKET

To CU Members:

Eleven employees of Consumers Union are among those who have undergone arrest for picketing in support of locked-out union employees of the Ohrbach department store in New York City. As this issue goes to press, their cases are still pending in the courts.

The labor struggle going on at Ohrbach's has peculiar angles. Two years ago, employees of the store waged a partially successful strike, gaining better wages and working conditions but not union recognition. During the past several months, the Ohrbach management has proceeded to weed out active union members—employees, in some cases, with long records of service—discharging them a few at a time. The total number discharged is now 45.

These discharged employees and those sympathetic to their cause, including members of the CU staff, have undertaken picketing of the store. There is no strike, as the management truthfully informs its customers. There is instead a lock-out.

Consumers Union employees, themselves all A. F. of L. members, have joined the picketing not only out of sympathy with their fellow workers at Ohrbach's, but also because it is a test of the right of the wronged employees of a retail store to undertake by peaceful means to inform customers of the store of the unfair treatment given them. This right they must maintain, or lose an important means of enforcing fair dealing on the part of employers.

The employees of Consumers Union ask CU members to help as consumers in such struggles by not buying from anti-union stores.

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